L1430655138 - Peoria
Allied Iron and Steel
ILD980259014
SF/HRS

560301-A0101

State Lead

5808

CERCLA
Preliminary Assessment Report

Illinois Environmental Protection Agency
P.O. Box 19276,
Springfield, IL 62794-9276

Confidential Material May be Enclosed

Executive Summary

Allied Iron and Steel was placed into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on July 27, 1988. It was placed into the system due to the discovery of dioxin compounds in the ash of the wire burning incinerator and in the surrounding soil.

This approximately 5 acre site is located at 2900 (prev 2701) West Clarke Street, Peoria County, Peoria, Illinois (Township 8 East, Range 8 East, Section 19, Plot 4F-G). The surrounding properties include right of ways of the C&NW R.R. to the north, east, and south, and U.S. Route 24 to the west. IBS, Inc., a large salvage operation functioning in a similar capacity to Allied Iron and Steel, and BFI Waste Systems, are located approximately 500 feet to the east. Small businesses and residential areas exist within 500 feet to the north. Kickapoo Creek is located 1/4 mile to the south, and the Illinois River is just over 1 mile to the east.

The property is owned by Irving and Howard Miller, residing at 1612 SW Adams St., Peoria, Il. The initial property was bought by Irving and Howard Miller in 1958 from Ann and Herbert Merkel, and from Betty and W. Don Ford. Irving and Howard Miller acquired the remaining parcels that make up the present day property in 1965, 1970, and 1971 from the Chicago and Northwestern Railroad Company (C&NW R.R.). According to IEPA records and knowledge of the location among the railroad right of ways, the present type of

operation is believed to be the only historical use of the site.

The facility is a scrap metal processor and has been in operation since about 1963. It has an automobile shredder, an aluminum sweat furnace, and a wire burning incinerator for recovering copper wire. The incinerator is an Emissions Control Corp. Model T100 with a #2 diesel fired afterburner. The unit has a primary chamber and an afterburner. One burner is present in the primary chamber. The feed material was primarily insulated wire, but also included electric motors. Each batch weighed about 300 lbs and was incinerated for seven hours. The incinerator was in operation for at least nine years and was operated 15 to 20 times a year. Operation of the incinerator was discontinued in May of 1987 after dioxins were detected in the ash.

A study of 10 incinerators in Illinois was conducted by the IEPA following the review of the USEPA Tier Four National Dioxin Strategy Ash Sampling Program, which included a Peoria, Il. facility. The study was conducted on Illinois facilities with incinerators comparable to those studied by the USEPA in order to determine if ash from these other facilities contained similar levels of dioxins. The Allied Iron and Steel facility in Peoria was included in this IEPA study because of it's wire burning incinerator.

In April of 1987, two ash samples from inside the incinerator and one soil sample from about four feet away were collected. Analysis

of these samples revealed concentrations of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) at 10.7 ppb in an ash sample, and 0.12 ppb in a soil sample. 2,3,7,8,-TCDD has known carcinogenic toxicity and is used as a reference for the other dioxin compounds. Other dioxin and furan isomers ranging from 5.9 ppb to 268.91 ppb in the ash and from 4.7 to 73.03 ppb in the soil were also detected. Applying the 2,3,7,8-TCDD Equivalency Method to calculate the isomer's toxicity, sample equivalents to 2,3,7,8-TCDD were 7.85 ppb in the ash and 1.73 ppb in the soil. It was further noted in the study that most of the recorded concentration values for the saturated signals were only lower estimates and the real values may be higher by as much as one order of magnitude.

The author conducted a site reconnaissance between 1:00 and 2:00 pm on August 17, 1990. The facility is currently actively reclaiming steel from the automobiles it shreds as well as from other sources including general scrap metal and appliances.

The Allied Iron and Steel facility is located on a 100-year floodplain. Review of nearby water well logs and borings indicate that the geology at the site consists of the Sanquoty Sand overlaying the Carbondale Formation. The aquifer of concern is the Quaternary system located in this layer of sands, gravels and clays extending from the ground surface to a depth of 130-150 feet. According to area well logs, groundwater elevation is around 16-18 feet below the ground surface. Water for the surrounding area is supplied through municipal and private wells. IEPA records

indicate that the nearest private well is located approximately 3/4 mile to the southwest, and a group of Peoria public water supply wells are about 3/4 of a mile to the northeast of the site. These wells are screened in the Sanquoty Sand aquifer. Using USGS maps, census information, and municipal directories, it was determined that approximately 130,000 people use water from the municipal and private wells located within four miles of the site.

Area surface water includes the Kickapoo Creek, 1450 feet south of the site, and the Illinois River, approximately 61,000 feet east of the site. According to IEPA records, no downstream public water intakes exist within 15 miles. The estimated population within a four mile radius of the site is about 100,000 people. The site is fenced and direct exposure appears to be restricted to facility employees.

Due to the toxic nature of 2,3,7,8-TCDD, its confirmed presence and the potential risks it poses to the population and environment, the author has assigned a "high" priority rating to this site and recommends that the Region V office of the USEPA conduct a screening Site Inspection.

Allied Iron and Steel
Dioxin (CDD/CDF) Analytical Data
May, 1987 Sampling Event

Parameter (ppb)	Ash Sample	Ash Sample	Soil Sample
2378 TCDD	10.71	[0.061]	0.12
Total TCDD	87.04	7.88	2.38
12378-PCDD	14.72	[0.089]	[1.06]
Total PCDD	123.72	48.02	8.05
123478 HxCDD	8.6	[0.073]	[1.627]
123678 HxCDD	19.64	9.95	1.81
123789 HxCDD	30.24	14.02	2.64
Total HxCDD	143.24	125.51	20.89
1234678 HpCDD	37.4	86.92	17.75
Total HpCDD	74.28	184.73	34.12
OCDD	77.22	146.78	40.83
2378 TCDF	93.73	10.48	2.33
Total TCDF	215.05	268.91	29.11
12378 PCDF	22.79	8.93	2.16
23478 PCDF	22.58	25.11	4.7
Total PCDF	150.23	204.11	34.97
123478 HxCDF	23.76	66.94	16.89
123678 HxCDF	--	19.96	5.37
234678 HxCDF	23.79	43.82	8.77
123789 HxCDF	8.87	5.9	[0.007]
Total HxCDF	159.49	244.0	55.59
1234678 HpCDF	31.93	165.61	49.13
1234789 HpCDF	23.32	16.56	6.2
Total HpCDF	95.59	236.21	73.03
OCDF	72.44	92.29	53.1
Total PCDF	693	1046	
Total PCDD+PCDF	1198	1558	

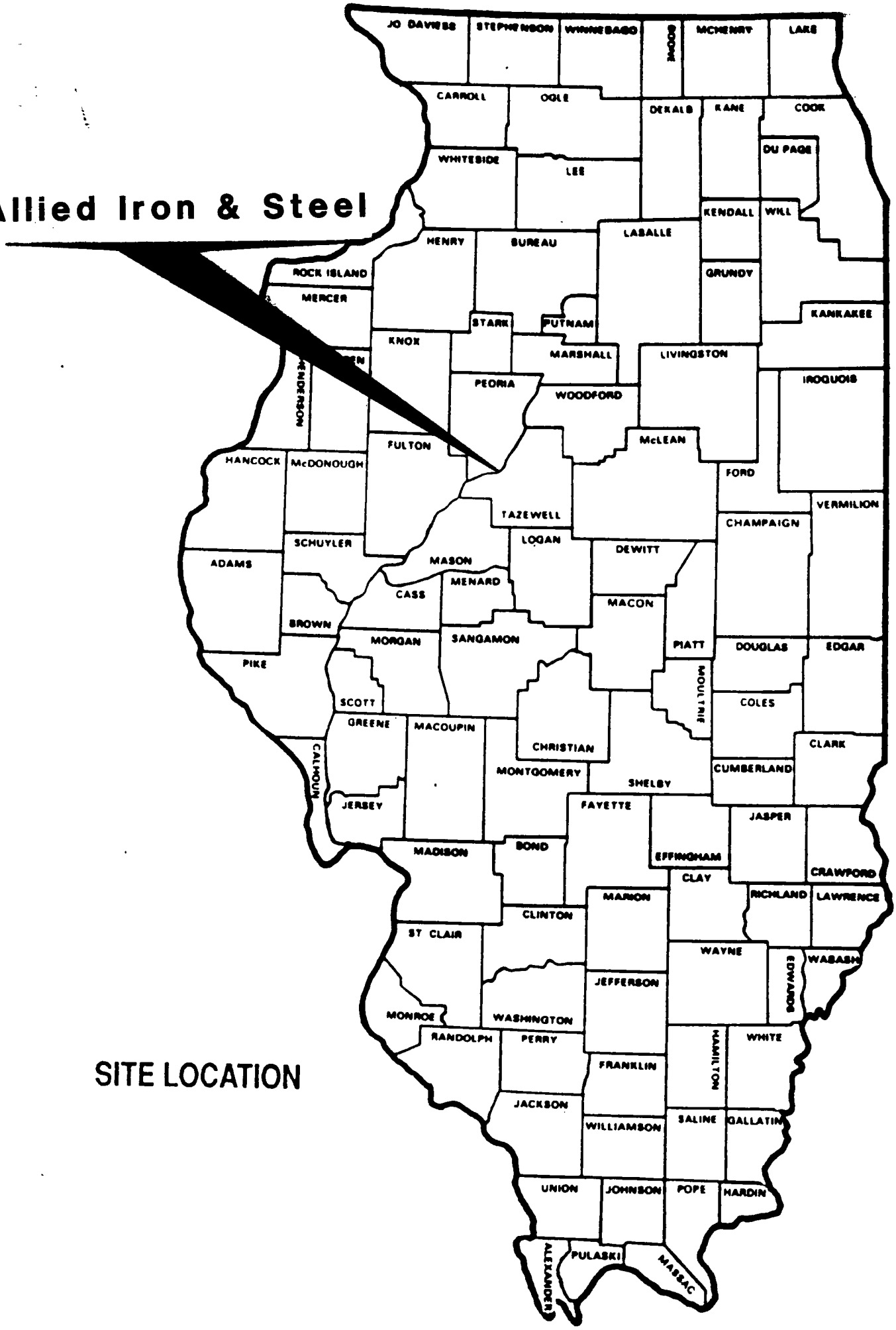
TCDD - Tetrachlorodibenzo-p-dioxin
PCDD - Pentachlorodibenzo-p-dioxin
HxCDD - Hexachlorodibenzo-p-dioxin
HpCDD - Heptachlorodibenzo-p-dioxin

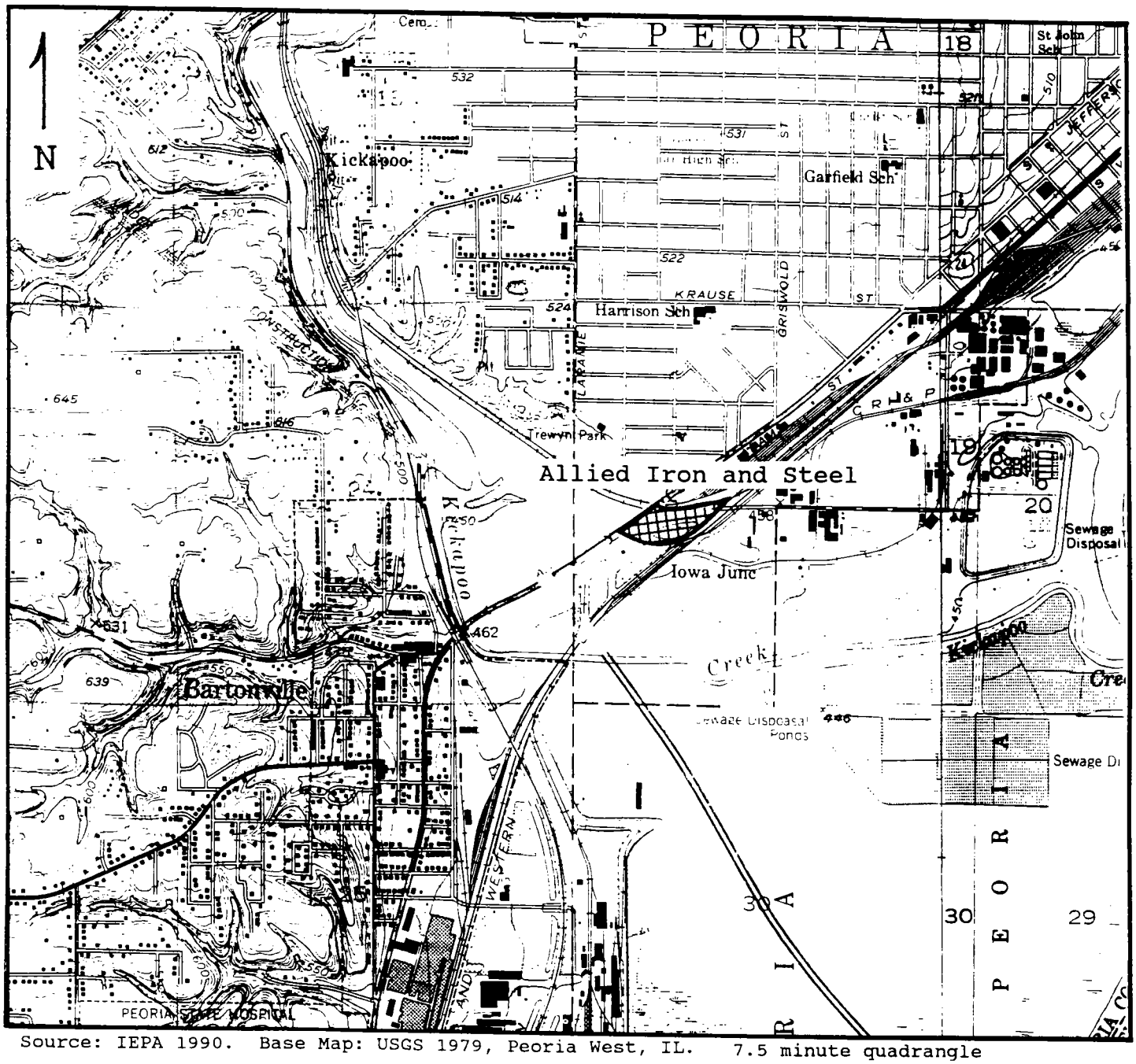
TCDF - Tetrachlorodibenzofuran
PCDF - Pentachlorodibenzofuran
HxCDF - Hexachlorodibenzofuran
HpCDF - Heptachlorodibenzofuran

Allied Iron and Steel
(2378-TCDD) Toxic Equivalent Concentrations

Parameter (ng/g)	Ash Sample TEQ	Soil Sample TEQ
2378 TCDD	0.0	0.120
Other TCDD	0.079	0.023
12378-PCDD	0.000	0.000
Other PCDD	0.240	0.040
123478 HxCDD	0.000	0.000
123678 HxCDD	0.398	0.072
123789 HxCDD	0.561	0.106
Other HxCDD	0.041	0.007
1234678 HpCDD	0.087	0.018
Other HpCDD	0.001	0.000
OCDD	0.000	0.000
2378 TCDF	1.048	0.233
Other TCDF	0.258	0.027
12378 PCDF	0.893	0.216
23478 PCDF	2.511	0.470
Other PCDF	0.170	0.028
123478 HxCDF	0.669	0.169
123678 HxCDF	0.200	0.054
234678 HxCDF	0.438	0.088
123789 HxCDF	0.059	0.000
Other HxCDF	0.011	0.002
1234678 HpCDF	0.166	0.049
1234789 HpCDF	0.017	0.006
Other HpCDF	0.001	0.000
OCDF	0.000	0.000
Total TEQs	7.85	1.73

TEQ - Toxic Equivelent Quotient

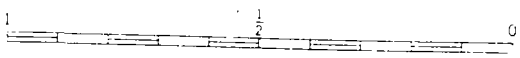

Allied Iron & Steel
SITE LOCATION
JO DAVIESS
STEPHENSON
WINNEBAGO
BOONE
MCHENRY
LAKE
CARROLL
OGLE
DEKALB
KANE
COOK
DU PAGE
WHITESIDE
LEE
KENDALL
WILL
HENRY
BUREAU
LASALLE
ROCK ISLAND
MERCER
GRUNDY
KANKAKEE
STARK
PUTNAM
KNOX
MARSHALL
LIVINGSTON
HENDERSON
PEORIA
WOODFORD
IROQUOIS
FULTON
McLEAN
HANCOCK
McDONOUGH
FORD
VERMILION
TAZEWELL
CHAMPAIGN
SCHUYLER
LOGAN
DEWITT
ADAMS
MASON
MENARD
CASS
MACON
BROWN
MORGAN
SANGAMON
PIATT
DOUGLAS
EDGAR
PIKE
MOULTRIE
SCOTT
COLES
GREENE
MACOUPIN
CHRISTIAN
CLARK
CALHOUN
MONTGOMERY
CUMBERLAND
SHELBY
JERSEY
FAYETTE
JASPER
MADISON
BOND
EFFINGHAM
CRAWFORD
CLAY
MARION
RICHLAND
LAWRENCE
CLINTON
ST CLAIR
WAYNE
WABASH
EDWARDS
JEFFERSON
MONROE
WASHINGTON
RANDOLPH
PERRY
WHITE
HAMILTON
FRANKLIN
JACKSON
SALINE
GALLATIN
WILLIAMSON
UNION
JOHNSON
POPE
HARDIN
ALEXANDER
PULASKI
MASSAC



Source: IEPA 1990. Base Map: USGS 1979, Peoria West, IL. 7.5 minute quadrangle

SITE MAP

Scale: 1 inch = 2011 feet



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

EPA

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: 980259014

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Allied Iron and Steel	2900 West Clarke Street				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Peoria	IL	61602	Peoria	143	18
09 COORDINATES LATITUDE: 40 39 32.__ LONGITUDE: _89 38 14.__	Peoria West Quad				

10 DIRECTIONS TO SITE (Starting from nearest public road)
Go South on Clarke Street where it intersects Route 24, where Washington Street becomes South Adams St. Follow Clarke street until it runs into Allied Iron and Steel

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)		
Irving and Howard Miller (A. Miller Company)	1612 SW. Adams Street		
03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Peoria	IL	61602	( )
07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)		
John Miller	2900 West Clarke Street		
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
Peoria	IL	61602	(309) 637-7756

13 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☒ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES ☐ NO DATE 8/17/90 (MONTH DAY YEAR)
BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)
CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)
☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
1963-1964 (BEGINNING YEAR) — (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Dioxins, Furans (Toxic, Persistant)
Metals
PCBs

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Groundwater (Environment)
Direct Contact (Environment/Population)
Surface Water (Environment/Population)

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☒ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)			03 TELEPHONE NUMBER
				( )
04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Henry J Konzelmann	IEPA	LPC - Pre Remedial	(217) 782-6760	__/__/__ (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	9802590 14

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- A SOLID
- B POWDER, FINES
- C SLUDGE
- E SLURRY
- F LIQUID
- G GAS
- X D OTHER (Specify) Ash, Soil

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

- TONS
- CUBIC YARDS Ash - Approx 1 yd³ Soil - Unknown
- NO OF DRUMS

03 WASTE CHARACTERISTICS (Check all that apply)

- X A TOXIC
- B CORROSIVE
- C RADIOACTIVE
- X D PERSISTENT
- E SOLUBLE
- F INFECTIOUS
- G FLAMMABLE
- H IGNITABLE
- I HIGHLY VOLATILE
- J EXPLOSIVE
- K REACTIVE
- L INCOMPATIBLE
- M NOT APPLICABLE

Unknown

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	Unknown		Dioxin
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	Unknown		

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	2,3,7,8 tetrachlorodibenzo-p-dioxin	1746016	Unknown	10.7	ppb
OCC	Other Isomers	-	Unknown	8.6 - 215.1	ppb

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

IEPA Division of Land Pollution Control Files
Peoria County ASCS Office
Peoria County Recorder Office
Division of Air Pollution Control Files
Ash Samplings of 10 Incinerators in Illinois
IEPA ENV/88-028

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	980259014

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 125,000
02 [ ] OBSERVED (DATE ___) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Depth to groundwater is approximately 15 feet

01 [X] B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: ___
02 [ ] OBSERVED (DATE: ___) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Kickapoo Creek is approximately 1380 feet from the incinerator, and the Illinois River is about 1 mile to the east. The site is located on a 100 year floodplain.

01 [X] C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: ___
02 [ ] OBSERVED (DATE: ___) [X] POTENTIAL in past [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Unknown

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: ___
02 [ ] OBSERVED (DATE: ___) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

N/A

01 [ ] E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: ___
02 [ ] OBSERVED (DATE: ___) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Unknown

01 [X] F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 5 (Acres)
02 [X] OBSERVED (DATE May, 1987) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

2,3,7,8 TCDD was found in the soil at a concentration of 0.12 ppb unit equiv. toxicity

01 [X] G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 125,000
02 [ ] OBSERVED (DATE ___) [X] POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

Nearest well approximately

01 [X] H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: 14
02 [ ] OBSERVED (DATE ___) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

14 workers normally on the site. Workers perform functions around the incinerator with no restriction of access. In addition, the facility still uses the structure to burn trash in.

01 [X] I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: ___
02 [ ] OBSERVED (DATE: ___) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

See C above.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: 980259014

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include names of species)
Unknown

01 ☒ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
From surface water runoff into Kickapoo Creek which could bioaccumulate in fish.

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills, runoff, standing liquids, leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Unknown

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

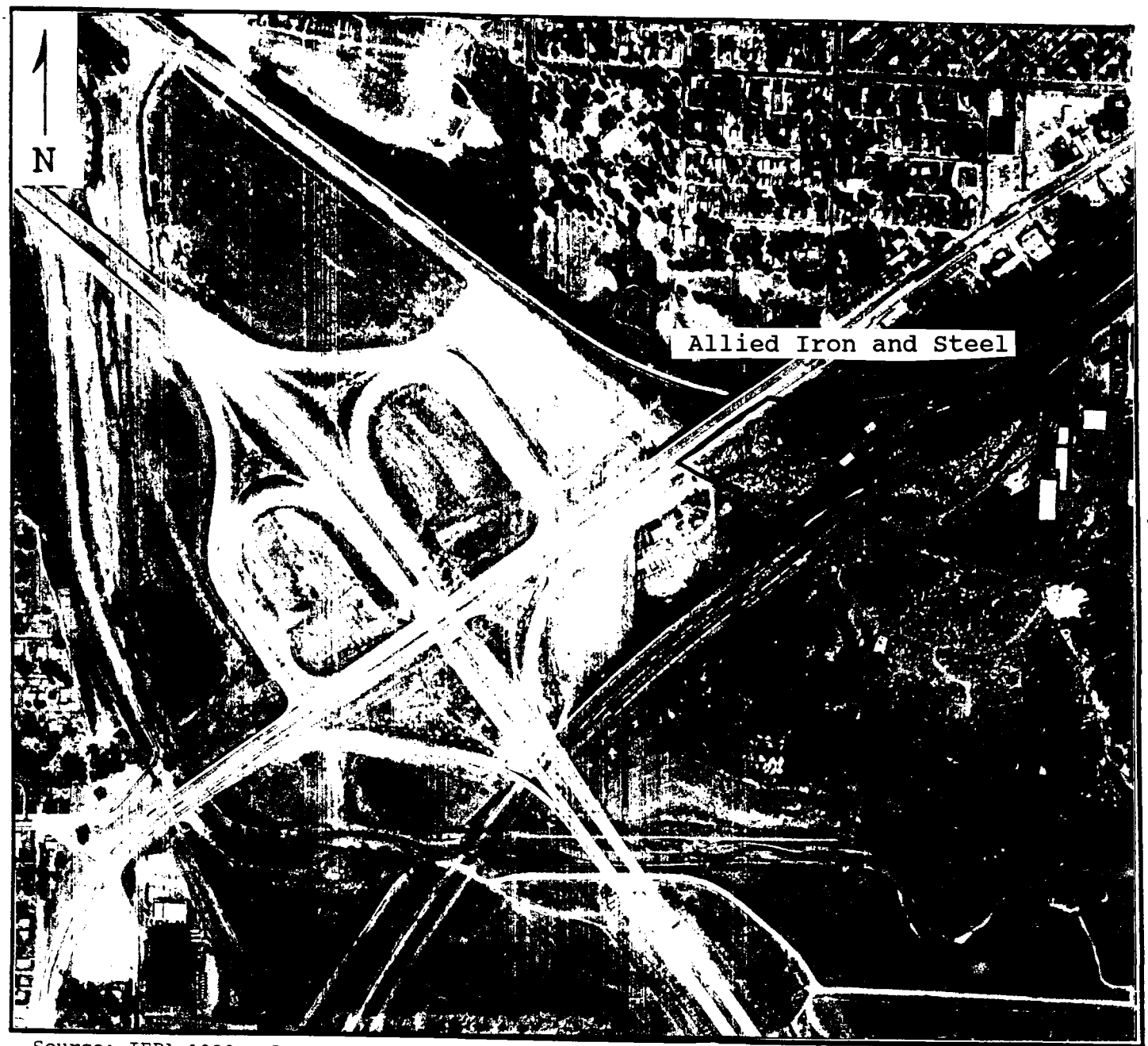
IV. COMMENTS

A site reconnaissance was conducted 8/17/90

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

IEPA Division of Air Pollution Control Files ID # 143 065 ALY
IEPA Division of Land Pollution Control Files

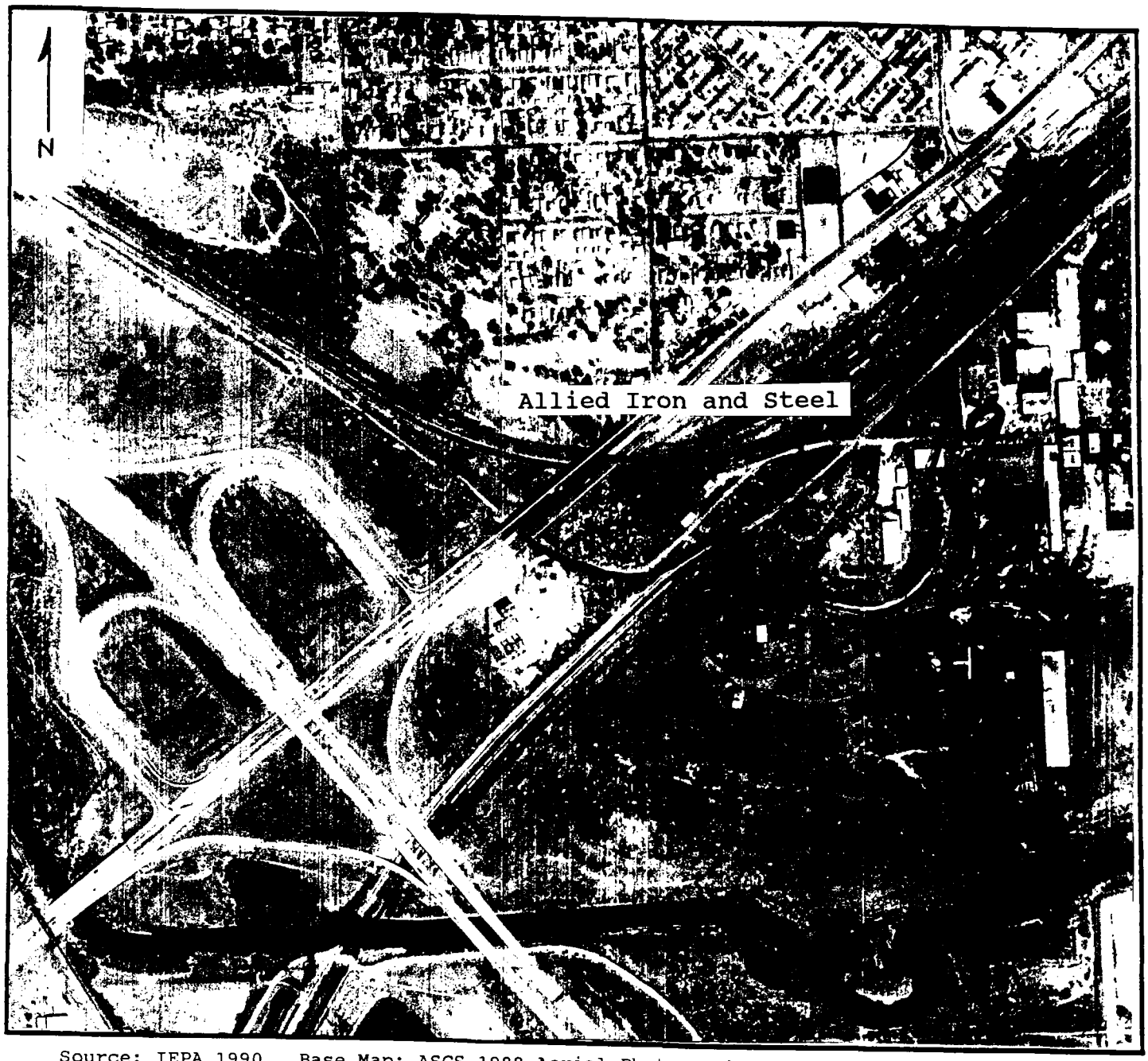
EPA FORM 2070-12 (7-81)



Source: IEPA 1990. Base Map: ASCS 1978 Aerial Photograph

1978 AERIAL PHOTO

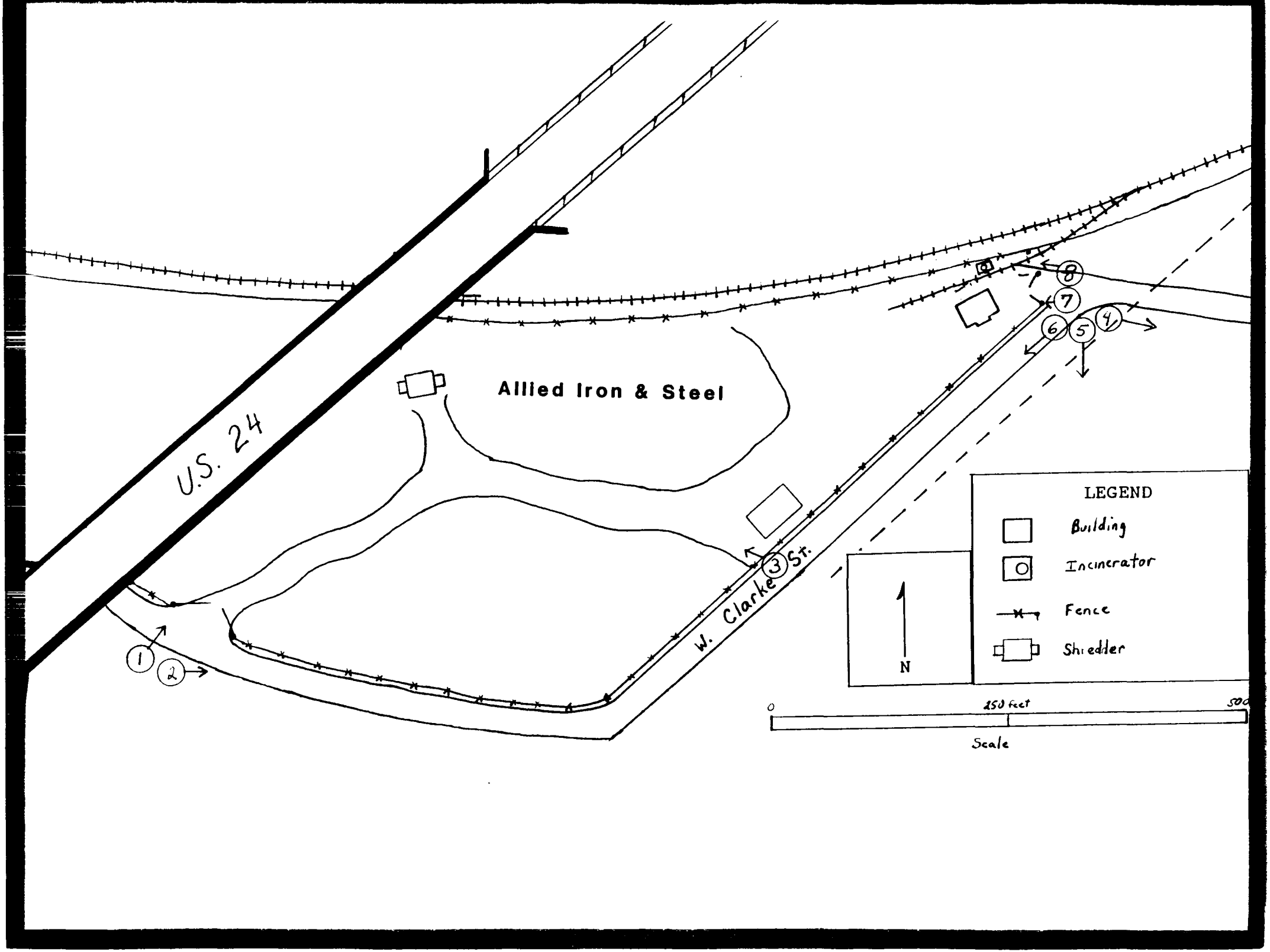
Approximate Scale: 1 inch = 582 feet

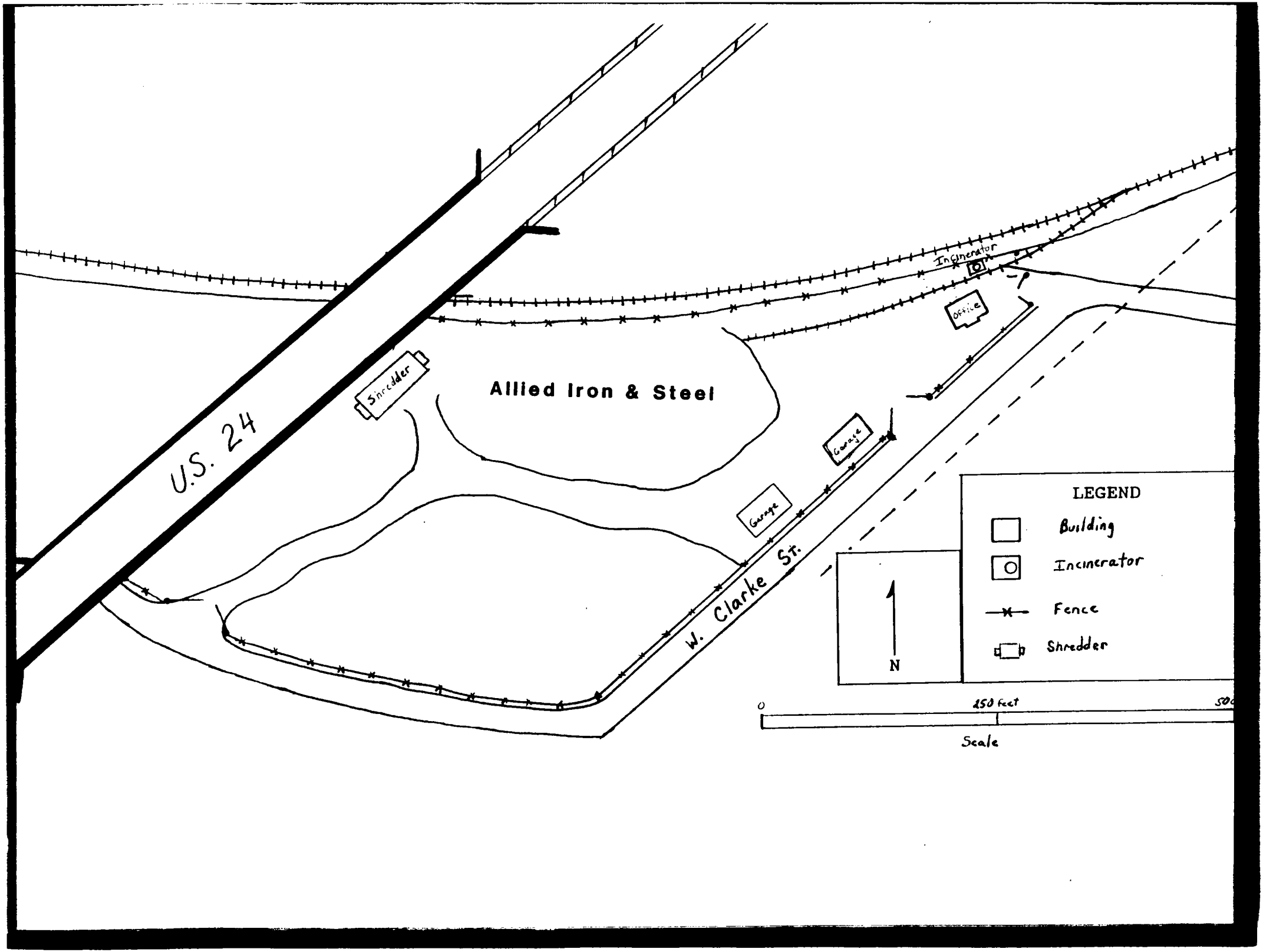


Source: IEPA 1990. Base Map: ASCS 1988 Aerial Photograph

1988 AERIAL PHOTO

Approximate Scale: 1 inch = 582 feet


U.S. 24
Allied Iron & Steel
W. Clarke St.
1
2
3
4
5
6
7
8
LEGEND
Building
Incinerator
Fence
Shredder
N
0
250 feet
Scale


U.S. 24
Allied Iron & Steel
Shredder
Incinerator
Office
Garage
Garage
W. Clarke St.
LEGEND
Building
Incinerator
Fence
Shredder
N
0
250 feet
Scale

SDMS US EPA Region V

Imagery Insert Form

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Due to certain scanning equipment capability limitations, the document page(s) is not available in SDMS.

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2 TOPOGRAPHIC MAPS

☐ Document is available at the EPA Region 5 Records Center.

Specify Type of Document(s) / Comments:

DATE: August 17, 1990

TIME: 1:10 pm

Photograph by:

Hank Konzelmann

Location: 980259014

Allied Iron + Steel

Peoria / Peoria County

Comments: Picture taken toward

Northeast

①

DATE: August 17, 1990

TIME: 1:10 pm

Photograph by:

Hank Konzelmann

Location: Peoria County

Peoria/Allied Iron + Steel

Comments: Picture taken toward

East

②

DATE: August 17, 1990

TIME: 1:12 pm

Photograph by:

Hank Konzelmann

Location: 980259014

Allied Iron + Steel

Peoria / Peoria County

Comments: Picture taken toward

Northwest

(3)

DATE: August 17, 1990

TIME: 1:14 pm

Photograph by:

Hank Konzelmann

Location: Peoria County

Peoria/Allied Iron + Steel

Comments: Picture taken toward

East

(4)

DATE: August 17, 1990

TIME: 1:16 pm

Photograph by:

Hank Konzelmann

Location: 980259014

Allied Iron + Steel

Peoria / Peoria County

Comments: Picture taken toward

South

(5)

DATE: August 17, 1990

TIME: 1:16 pm

Photograph by:

Hank Konzelmann

Location: Peoria County

Peoria/Allied Iron + Steel

Comments: Picture taken toward

Southwest

(6)

DATE: August 17, 1990

TIME: 1:16 pm

Photograph by:

Hank Konzelmann

Location: 980259014

Allied Iron + Steel

Peoria / Peoria County

Comments: Picture taken toward

Southwest

(7)

DATE: August 17, 1990

TIME: 1:16 pm

Photograph by:

Hank Konzelmann

Location: Peoria County

Peoria/Allied Iron + Steel

Comments: Picture taken toward

West

(8)

SUPPORTING

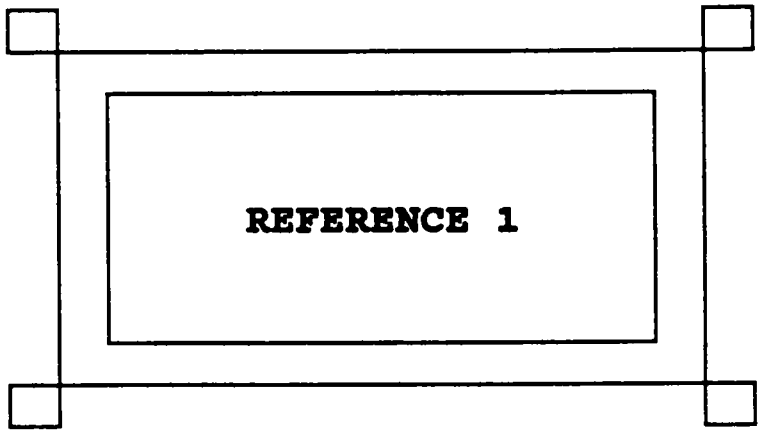
DOCUMENTS

REFERENCES

Reference 1. Copies of relevant Peoria County Recorder's Office records.

Reference 2. Copy of relevant sections of the Ash Samplings of Ten Incinerators in Illinois. IEPA/ENV/88-028. May, 1988.

Reference 3. Area well logs from the Illinois State Water Survey


REFERENCE 1

REFERENCE 1

476

HANDLE WITH CARE BOOK 339

59-1

Filed for Record on the 20 day of Oct A. D. 19 21 at 8:03 o'clock A. M.

This Indenture WITNESSETH, That the Grantors, Della Wasson and George H. Wasson, wife and husband,

of the City of Peoria in the County of Peoria and State of Illinois for and in consideration of the sum of Thirteen Hundred Fifty Dollars ($1350.00) ~~DOLLARS~~ in hand paid, Convey and Warrant to The Minneapolis & St. Louis Railroad Company, a corporation of the State of Iowa, ~~of the~~ ~~County of~~ ~~and State of~~

the following described Real Estate, to-wit:

All that part of Lot Twelve (12) in Merwin's Subdivision of the Southwest Quarter (SW¼) of Section Nineteen (19), Township Eight (8) North, Range Eight (8), east of the 4th P. M., lying north of the right of way of The Minneapolis & St. Louis Railroad Company, except that part thereof heretofore conveyed to Samuel Bradshaw, the property hereby conveyed being about ninety (90) feet in width east and west.

REFERENCE FOR 70-1146C
BRADSHAW, DOC. # L.C.-100 : COMG SE COR LOT 12 : TH N 4.6 CH ; WLY ALG S LN PEORIA & OQUANKA RR TO A FENCE ; SLY ALG FENCE TO S LN LOT 12 ; TH TO POB
BEING A STRIP OFF E SIDE LOT 12 70.5' ON N & 51' ON S.

DOCUMENT NO. 64383C1 FILED FOR RECORD IN RECORDER'S OFFICE OF PEORIA COUNTY, ILLINOIS, DEC 8 - 1958 at 3:54 O'CLOCK P.M.

WARRANTY DEED Albert Hamm RECORDER OF DEEDS

010-223-61-181-100 A

THIS INDENTURE WITNESSETH, That the Grantors, ANNA M. MERKEL, a widow who has not remarried and surviving joint tenant of HERBERT C. MERKEL, Deceased; BETTY JANE FORD and W. DON FORD, her husband, all of the County of Peoria and State of Illinois, for and in consideration of the sum of One ($1.00) Dollar and other good and valuable consideration in hand paid, CONVEY and WARRANT to IRVING MILLER and HAROLD MILLER, his brother, as joint tenants and not as tenants in common, of the County of Peoria and State of Illinois, the following described real estate, to-wit:

That part of Lots Five (5), Six (6), Seven (7), Twelve (12), Thirteen (13) and Fourteen (14) of MERWIN'S SUBDIVISION of the Southwest Quarter of Section Nineteen (19), Township Eight (8) North, Range Eight (8) East of the Fourth Principal Meridian, described as follows: Commencing at a point in the East line of Lot Seven (7) aforesaid which is Twenty-six and Four Tenths (26.4) feet South of the North corner of said Lot; thence Westerly Two Hundred Seventy-four and Nine Tenths (274.9) feet at an angle of Seventy-nine (79) Degrees Seven (07) Minutes measured from right to left from said East lot line to a point, said point being also the East line of the Minneapolis & St. Louis Railway Company's station grounds; thence North Four (4) Degrees Fifty (50) Minutes West, Fifty-seven and Six Tenths (57.6) feet to a point on the South right of way line of the New South Adams Street Viaduct; thence North Fifty-three (53) Degrees Twenty-three (23) Minutes East, Two Hundred Fifteen and Six Hundredths (215.06) feet along said right of way line to a point, said point being also the South right of way line of the C. B. & Q. Railroad Company; thence Easterly along said right of way line, Seven Hundred Seventy-one and Eighty Hundredths (771.80) feet along an arc having a radius One Thousand Nine Hundred Ninety-seven and Forty-five Hundredths (1997.45) feet deflecting Twenty-two (22) Degrees Eight (08) Minutes to a point on the Northwesterly line of New Clark Street; thence South Fifty (50) Degrees One (01) Minute West, Five Hundred Forty-four and Thirty Hundredths (544.30) feet along the Westerly line of said New Clark Street to a point; thence North Seventy-nine (79) Degrees Seven (07) Minutes West, Two Hundred Forty-nine and Sixty-six Hundredths (249.66) feet to the place of beginning, as shown by the Plat of Survey No. 3526 of Zumwalt, Hull and

TOWNSHIP

YEAR NEW	BOOK CODE	TAX CODE	I.D. NUMBER	TWP.	SEC.	BLOCK	PARCEL
87	C·19	001		18	19	302	010

ADDRESS OF PROPERTY: 2701 W. CLARKE STREET, PEORIA, 61604

CLASSIFICATION OF PROPERTY: C

CARD NUMBER: 1 OF 2

Irving & Harold Miller
1612 SW Adams Street
Peoria, IL 61602

MERWIN'S SUB SW 1/4 SEC 19-8-8E 6.01 PL
ALL THAT PT OF TR AS DESC PER DOC #'S
1135-41, 65-11104 & 71-09448 INCL PT VAC
OLD ADAMS ST LYING W OF SE LN ADAMS ST
(RTE #24) RELOCATED PT LOTS 5, 6, 7, 12,
13 & 14

RECORD OF OWNERSHIP		DATE	SALE PRICE
(PT LOTS 5,6,7,12,13,14)	WD 1135-41	1958	
(PT LOTS 5,6,7,12,13)	QC 65-11104	7-1-65	
(PT LOTS 5,6,7,11,12,13)	QC 70-11460	8-31-70	
(" - amends 70-11460)	QC 71-09448	4-7-71	
(OLD ADAMS ST VACATION)	1010-106		

LAND COMPUTATIONS

1 LOT 2 GROSS 3 NONE

FRONTAGE	DEPTH	UNIT VALUE	DEPTH FACTOR	ACTUAL VALUE	TRUE VALUE	TAX VALUE
LOT DEPRECIATION						
CORNER INFL.						

CLASSIFICATION	NO. OF ACRES		RATE	TRUE VALUE	TAX VALUE
TILLABLE					
TILLABLE					
TOTAL RURAL IMPROVED					
PERMANENT PASTURE					
WOODLAND					
WASTELAND					
HOMESITE					
TOTAL RURAL UNIMPROVED					
TOTAL ACREAGE					
TOTAL VALUE LAND (GROSS)					
TOTAL VALUE BUILDINGS					
TOTAL VALUE LAND AND BUILDINGS					

'87 DESC CHANGE TO EXCLUDE RTE #24 (Adams St) ROW & INCLUDE MISIDENTIFIED PARCELS 18-09-302-008 & 18-19-504-018

PROPERTY FACTORS

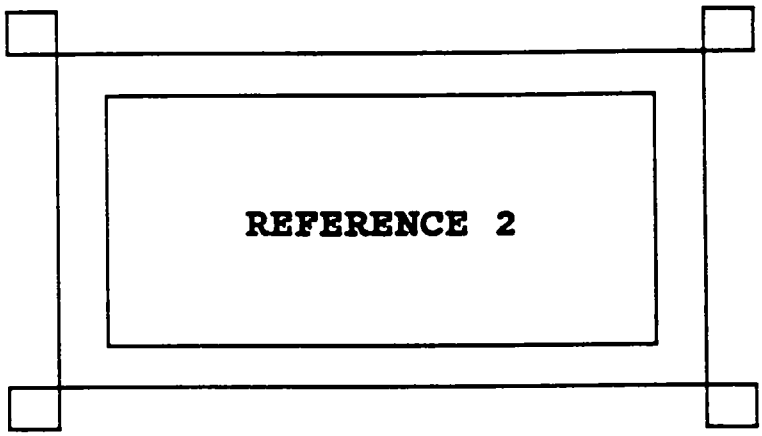
TOPOGRAPHY		IMPROVEMENTS	
LEVEL		CITY WATER	
HIGH		SEWER	
LOW		GAS	
ROLLING		ELECTRICITY	
SWAMPY			
		ALL UTILITIES	
DISTRICT		STREET OR ROAD	
IMPROVING		PAVED	
STATIC		SEMI-IMPROVED	
DECLINING		UNIMPROVED	
BLIGHTED		SIDEWALK	

BUILDING PERMIT RECORD

DATE	NUMBER	AMOUNT	PURPOSE

SUMMARY OF ASSESSED VALUES **BASE YEAR ASSESSED VALUE $**

			19 ___		19 ___		19 ___		19 ___		19 ___	
	ASSESSOR	B OF R	ASSESSOR	B OF R	ASSESSOR	B OF R	ASSESSOR	B OF R	ASSESSOR	B OF R	ASSESSOR	B OF R
UNIMPROVED LAND OR LOT ASSESSED VALUATION												
IMPROVED LAND OR LOT ASSESSED VALUATION												
IMPROVEMENTS ASSESSED VALUATION												
TOTAL REAL PROPERTY ASSESSED VALUATION												


REFERENCE 2

Illinois
Environmental
Protection Agency

Division of Environmental Programs
2200 Churchill Road
Springfield, Illinois 62794-9276

May 1988

IEPA/ENV/88-028

Ash Samplings of Ten Incinerators in Illinois

Final Report

DCN No. 88-262-020-03

ASH SAMPLING OF TEN INCINERATORS IN ILLINOIS

FINAL REPORT

Prepared for:

Janice Perino
Illinois Environmental Protection Agency
2200 Church Hill Road
Springfield, Illinois 62706

Prepared by:

Andrew J. Miles
Michael A. Palazzolo
Radian Corporation
3200 Progress Center
Post Office Box 13000
Research Triangle Park, North Carolina 27709

May 1988

TABLE OF CONTENTS

LIST OF FIGURES

One of the 22 isomers of PCDD with four chlorine atoms is 2378-tetrachlorodibenzo-p-dioxin (2378-TCDD). This isomer is the principal focus of many dioxin studies. The term 2378-TCDD toxic equivalency factor is also used in the report. The toxic equivalency factor is used to compare the relative potency of one mixture of CDD's and CDF's to different mixtures of CDD's and CDF's. The use of toxic equivalency factors (TEF's) permits an estimation of the carcinogenicity of the mixture of CDD and CDF compounds relative to the known carcinogenicity of 2378-TCDD. The TEF's of the various CDD's and CDF's used in this analysis are presented in Table 1-3.

1.3 REPORT ORGANIZATION

This report is organized as follows: Section 1.0 is the introduction. The summary and recommendations are presented in Section 2.0, and a brief source-by-source description is presented in Section 3.0. Analytical results and quality assurance data are summarized in Section 4.0. Appendices A and B contain copies of the Triangle Laboratories Analytical Reports and trip reports, respectively.

1.0 INTRODUCTION

1.1 BACKGROUND

This report presents the results of an ash sampling program of 12 incinerators located in Illinois. The decision to conduct ash sampling of these 12 incinerators in the state was made by Illinois EPA representatives following a review of the results of the Tier 4 National Dioxin Study Ash Sampling Program[1] which included the sampling and analysis of one wire reclamation incinerator located in Peoria, Illinois. This ash sample contained appreciable levels of polychlorinated dibenzo-p-dioxins (PCDD's) and polychlorinated dibenzofurans (PCDF's). A review of the state permit files showed that other similar wire reclamation incinerators were located in the state. This study was designed to determine if ash from these incinerators contained similar levels of CDD/CDF. Twelve sites were selected by Illinois EPA representatives, and samples were obtained at 10 of the sites by Radian Corporation over the period April 13-17, 1987. At two of the sites visited, ash samples could not be collected. The ash samples were analyzed for CDD's and CDF's by Triangle Laboratories, Inc., using high resolution gas chromatography/mass spectrometry.

1.2 NOMENCLATURE

Chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans can each contain from one up to eight chlorine atoms per molecule. Throughout this document, the term chlorinated CDD/CDF homologue will be used to indicate the family of CDD/CDF isomers with a fixed number of chlorine atoms. For example, the tetra-chlorinated CDD homologue consists of all CDD isomers containing four chlorine atoms. The abbreviations used for chlorinated CDD/CDF homologues are included in Tables 1-1 and 1-2. The abbreviations PCDD and PCDF are used to indicate polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) with four or more chlorine atoms, if excluding mono-, di- and tri-CDD/CDF. In the discussions of analytical results, the terms total PCDD and total PCDF represent the sum of the concentrations of the tetra- through octa-homologues.

2.0 SUMMARY AND RECOMMENDATIONS

2.1 SAMPLING

A total of 12 sites were visited by Radian Corporation and representatives of Illinois EPA as part of this wire reclamation ash sampling program. The 12 sites which were selected by Illinois EPA are listed in Table 2-1. Seven of the sites are located in the Chicago area. Ash samples could not be taken from two of the incinerators visited. The 10 sites which were sampled consisted of seven wire burners, two motor burnoff ovens and one aluminum sweat furnace. Only three of the seven wire reclamation incinerators were reported to be routinely operated at the time of the visit, and owners of the furnaces indicated a shift toward other means of recycling with higher copper recoveries, such as chopping or shredding.

Sampling was conducted the week of April 13-17, 1987. Grab samples of ash and soil were obtained from 10 of the sites following the National Dioxin Study Tier 4 ash sampling procedures. The number and type of samples obtained at each site are indicated in Table 2-1. A total of 40 samples were obtained, and 25 samples were submitted for tetra- through octa-PCDD/PCDF full-screen and 2378-TCDD/TCDF confirmation analyses using high resolution gas chromatography/mass spectrometry. Samples were submitted in two rounds for analysis. The first round consisted of ten ash samples, one from each site; then the second round consisted of ten soil and five ash samples at selected sites based on the first round of analysis.

2.2 ANALYTICAL RESULTS

Averages of PCDD/PCDF analytical results for ash from the 10 furnaces are presented in Table 2-2, along with available incinerator operating characteristics. Results are as follows:

1. As can be seen from Table 2-2, there is a wide range of ash PCDD/PCDF contents between incinerator types. Ash from wire burners (mean total PCDD/PCDF approximately 20,000 ng/g) have significantly

TABLE 2-1. SUMMARY OF ILLINOIS WIRE INCINERATOR STUDY ASH SITES SAMPLED BY RADIAN - APRIL 13-17, 1987

Name	Location	Incinerator Type	Model & No.	Status	No. of Samples Taken	# Samples for Analysis		
						Ash	Soil	Total
S. Edelman & Co.	Chicago	Wire Reclamation	United Corp. Model W-300	Operational	3 Ash 1 Soil	1	1	2
Alco Steel	Joliet	Wire Reclamation	United Corp. Model 10008R2 (U1202)	~2 days/mo	2 Ash 2 Soil	2	2	4
Elgin Salvage[a] & Supply	Elgin	Wire Reclamation	United Corp. Model 10008R2	Operational	3 Ash 1 Soil	3	1	4
Lake Salvage Co.[b]	Chicago	Wire Reclamation	RCF Model RCF8001	Shut down	3 Ash 2 Soil	2	2	4
Midwest Industrial Metals	Chicago	Aluminum Sweat Furnace	United Corp. Model AS-990	Furnace moved	3 Ash 1 Soil	1	1	2
Pielet Brothers Scrap	Chicago	Wire Reclamation	Coreco 9698	Operational	3 Ash 2 Soil	1	1	2
Allied Iron & Steel	Peoria	Wire Reclamation	Emissions Control Group Model T100	Shut down since 2/87	3 Ash 1 Soil	2	1	3
Westinghouse	Peoria	Motor burnoff oven	Pollution Control Products Model #150	Operational	3 Ash	1	--	1
Sol Tick & Co.	Decatur	Wire Reclamation	United Corp.	Shut down 2 yrs/ Under repair	0	--	--	0
Midland Iron & Steel	Moline	Wire Reclamation	Soper/ Midland	Shut down since 1986	3 Ash 1 Soil	1	1	2
Rock Island	Rock Island	Motor burnoff oven	Batco 252	Operational	3 Ash	1	--	1
Sipi Metals Corp.	Chicago	Rotary Reverbatory Furnace	Industronics Model HRV65	Operational	0	--	--	0
						15	10	25

[a] At Elgin Salvage and Supply, primary and secondary ashes are quenched by water baths.

[b] Lake Salvage is equipped with sprays between the primary and secondary chamber; these water sprays are not used.

TABLE 2-2. SUMMARY OF INCINERATOR OPERATING VARIABLES AND ASH CONCENTRATIONS FOR ILLINOIS WIRE RECLAMATION INCINERATORS

Site	Sampling Location 1°	Sampling Location 2°	Location of Burners 1°	Location of Burners 2°	Location of Burners AB	Heat Input MMBtu/hr 1°	Heat Input MMBtu/hr 2°	Heat Input MMBtu/hr AB	Fuel Type	Feed Quantity lb/batch	Copper Yield %	Temperature °F 1°	Temperature °F 2°	Temperature °F AB	Type of Wire/Feed	Average Ash Concentrations[a] PCDD ng/g	PCDF ng/g	Total PCDD/PCDF ng/g	2378-TCDD Equivalence ng/g
S. Edelman	-	x		x	x	.6	.6	1.2	Nat. Gas	300-500	70-80	600-800	1,400	1,800-2,200	Insulated copper wire	6.31	37.5	43.8	0.153
Alco Steel	-	x	-	-	x	-	-	-	Fuel Oil	220	50-75	-	-	2,100	Copper wire	4,155	19,991	24,146	249
Elgin[b]	-	x	x	-	x	.9		1.2	Nat. Gas	300-500	50-75	-	-	-	Rubber-coated; variable	14,787	37,271	52,057	494
Lake[c]	-	x	x	x	x	.45	.9	.45	Nat. Gas	450	-	-	-	-	Heavy cable; house wire	7,385	55,328	62,713	912
Midwest[d]	x	-	x	x	x	2	2	2	Nat. Gas	2,000	NA	1,600	-	1500-1600	Low grade aluminum & iron scrap	258	576	834	4.43
Pielet	x	-	-	-	x	-	6	-	Nat. Gas	500-600	85	-	-	1,650	Rubber-coated locomotive wire	50.7	140	191	1.06
Allied	x	-	-	-	x	-	-	1.05	Diesel	300-400	30-40	-	-	-	Domestic scrap wire	513	1046	1558	7.85
Westinghouse[e]	x	-	x	-	x	.5	-	-	Nat. Gas	-	NA	700	-	-	Electric motors and windings	0.400	1.06	1.46	0.016
Midland	x	-	-	-	x	-	3	-	Nat. Gas	1,000	30-40	-	-	1,400	#1 & #2 scrap wire	80.1	113	193	1.31
Rock Island[e]	x	-	-	x	-	-	-	-	Nat. Gas	750	NA	-	750-850	400-1,200	Electric motors	0.716	1.56	2.28	0.009

1° means primary chamber
2° means secondary chamber
AB means afterburner

[a] Ash samples could not be collected at Sol Tick and Sipi Metals.

[b] Primary and secondary chamber ashes are quenched by water baths.

[c] Lake Salvage is equipped with sprays between the primary and secondary chamber, these water sprays were not used. The Lake Salvage concentration is the average of two samples.

[d] Aluminum sweat furnace.

[e] Motor burnoff oven.

higher PCDD/PCDF contents than ash from motor burnoff ovens (mean total PCDD/PCDF = 1.87). Based on the single furnace, ash from aluminum sweat furnaces also have higher PCDD/PCDF contents than ash from motor burnoff ovens. The ash from the aluminum sweat furnace has higher PCDD/PCDF contents than ash from the two motor burnoff ovens, but this was lower than most of the wire reclamation incinerators.

2. There is also a wide variability in PCDD/PCDF contents within the wire reclamation incinerator source category sampled (43.8 to 62,713 ng/g PCDD + PCDF, i.e., three orders of magnitude and a range of 0.153 ng/g to 912 ng/g 2378-TCDD toxic equivalency factor). This compares to a toxic equivalency factor range of 0 to 656 ng/g for the Tier 4 wire reclamation incinerator ash samples.[3]

3. Four of the sites, Alco Steel, Elgin Salvage, Lake Salvage and Allied Iron and Steel have toxic equivalents in the soil which would most likely be at a level of concern in an industrial setting. There is no official USEPA policy for guidance in industrial areas, since each site is handled on a case-by-case basis. However, there is a file maintained for these sites, and the majority of the levels of concern determined at these sites have fallen in the range of 5-15 ng/g (ppb). The upper limit of the determined levels of concern to date has been set at 50 ppb for the cleanup of Jonhston Atoll in the Pacific Ocean.

4. There is insufficient measured operating data to be able to fully correlate incinerator types and operating conditions with the observed PCDD/PCDF ash levels. However, some factors that may affect PCDD/PCDF levels are evident from an inspection of the data. These are as follows:

    a. Secondary chamber ash levels, on average, are significantly higher than primary ash chamber levels. This observation is not unexpected and was the basis of

the Tier 4 ash sampling location selection criteria. On average, the secondary chamber ash is approximately 50 times higher in total PCDD/PCDF than primary chamber ash. This compares to ratios of 2:11 times higher between primary and secondary chambers for the Tier 4 data set.

b. Location of burners with respect to sampling location also apparently has an effect. The one incinerator with a burner located in the secondary chamber from which a sample was taken has significantly lower total PCDD/PCDF ash contents than the other three incinerators for which secondary chamber samples were taken.

5. A total of ten soil samples were taken and analyzed. Total PCDD/PCDF found in the samples ranges from 49.0 to 8,203 ng/g.

2.3 RECOMMENDATIONS

This subsection presents Radian's recommendations to Illinois EPA for further work in the area of PCDD/PCDF emissions from wire incinerators in the state. These recommendations are based on the analytical results from the 10 incinerators from which ash samples were obtained during this project, in conjunction with our experience in Tier 4 of the National Dioxin Study and other PCDD/PCDF sampling projects. These recommendations are as follows:

1. In order to predict controlled flue gas emissions more data in addition to ash results are necessary to prevent potentially erroneous conclusions. All of the ash samples taken during this program were from the primary or secondary chambers rather than from the afterburner or the stack. Thus, these ash results may be reflecting levels in the uncontrolled flue gas prior to the afterburner rather than controlled flue gas emissions. Therefore, a clear distinction must be made between PCDD/PCDF contents of primary or secondary chamber ash and controlled flue gas emissions from wire reclamation incinerators. Additional information, such as operating temperatures, excess oxygen levels and afterburner efficiencies

should be collected to aid in evaluation of the ash data. The findings of the ash sampling program of Tier 4 of the National Dioxin Study,[3] support this recommendation. During the Tier 4 study, the relationship between ash and flue gas emissions was statistically evaluated. Significant rank correlations were found between control device ash and uncontrolled flue gas PCDD/PCDF concentrations. This correlation was based on data from five sites in five different source categories which included sewage sludge incinerators, wood-fired boilers, black liquor boilers, carbon regeneration furnaces and copper recovery furnaces. The types of ash analyzed included baghouse ash, ESP ash and filterable solids from scrubber water. However, a quantitative relationship was not found. In addition, the relationship between control device ash and controlled flue gas PCDD/PCDF concentrations was found to be weak at best. This indicated that the control device can significantly affect controlled flue gas emissions. The efficiency of an afterburner on a drum and barrel reclamation incinerator for PCDD/PCDFs was evaluated under the Tier 4 program. The afterburner was found to be 95 percent efficient in destroying PCDD/PCDFs.

2. Conduct a source test on a model wire reclamation incinerator. This source test should include inlet and outlet emissions testing around an afterburner plus measurement of key process and control device variables such as scrap feed rate, firing rate of burners, the afterburner and flue gas temperatures, and CO and oxygen measurements. If possible, PCDD/PCDF emissions corresponding to a range of afterburner operating temperatures should be characterized. This information could then be used to set afterburner operating conditions for the existing wire reclamation incinerators in Illinois. One incinerator vendor has been identified who is willing to assist in this effort.

3. Investigate alternative recycling technologies such as chopping and stripping. Compare these technologies to wire burning with respect to range of applicability, costs, and environmental impacts. These other technologies may not be applicable to all types and grades of wire, and may have some adverse environmental impacts which should be compared to the impacts of wire burning.

4. Investigate/develop proper ash handling procedures for primary and secondary chamber ash from wire reclamation incinerators. The material has some metal value and can be recycled. Proper handling techniques are needed to minimize worker exposure and the potential for fugitive dust emissions. Practices employed in other secondary metals industries such as secondary lead and secondary copper for handling flue dust may be applicable. At a minimum, require storage of the ash in closed containers and control of fugitive dusts.

5. Investigate the prevalence of aluminum sweat furnaces in the state of Illinois. Identify the throughput of these units and ash generation rates and handling practices. Consider obtaining ash samples from two to three additional aluminum sweat furnaces to determine PCDD/PCDF content.

3.0 PROCESS DESCRIPTION AND SITE SPECIFIC INFORMATION

3.1 PROCESS DESCRIPTION

This section presents a brief description of wire reclamation incinerators in general. Site specific details and schematics of the incinerators sampled in the program are presented in Section 3.2.

Incineration is one of several methods used to recover copper from copper-bearing scrap. In the process, the insulation on the scrap wire is burned off resulting in a partially cleaned copper wire and ash. Most of the copper wire scrap burned in incinerators originates at factories, construction sites and utility companies. For this reason, wire reclamation incinerators are usually found in scrap yards located in or near large metropolitan areas.

There are many different designs used for wire reclamation incinerators; however, there are some commonalities. A typical wire reclamation incinerator consists of one or more chambers and an afterburner connected to a stack. In the following discussion the chambers are designated as follows: the first chamber is known as the primary or charging chamber and the second and consequent chambers are known as secondary or settling chambers. The older designs of wire reclamation incinerators are normally limited to a primary chamber and afterburner. New designs generally incorporate a secondary chamber prior to the afterburner. The designs also differ in placement of burners and use of water sprays for quenching. A typical wire reclamation incinerator is operated in a batch mode typically for 8 hours/day, 5 days/week. However, operation is variable and largely dependent on scrap availability.

At the beginning of a batch, a charge of insulated wire is placed in the primary chamber and is ignited using paper or the primary chamber burner, if one exists. Gases from the primary chamber flow through the secondary chamber where some settling of large particulate occurs and then to the afterburner where the flue gases are heated to 1,400^{0} to 2,000^{0}F, to control smoke, prior to discharge to the atmosphere. Once the burning of the insulation on the

wire is complete (one to six hours), the remaining copper (35 to 85 percent of the original charge weight) is removed from the primary chamber either manually or by forklift and stored on site for resale, typically to a secondary copper smelter.

Depending on the batch cycle time and availability of scrap, an incinerator may burn as much as five charges of feed a day. Periodically, ash collected in the primary and secondary chambers is removed manually and put in drums for reclamation or sent to a landfill for ultimate disposal.

Natural gas is typically used as the auxiliary fuel for wire incinerators; however, liquid propane or No. 2 fuel oil can be used.

Most incinerators operate with very little or no instrumentation to measure temperature or control draft and oxygen levels. Combustion conditions can be controlled by varying the amount of air allowed into the primary chamber during combustion. The amount of air is controlled by opening or closing the doors and the draft registers. The primary chamber temperature can go as high as 800^{o} to $1,200^{o}$F when an auxiliary burner is used. However, many operators restrict the temperatures and amount of oxygen to increase yield.

The amount and type of material fed to wire reclamation incinerators typically varies with each charge and depends on the type of scrap material on hand. Transformer cores and small motors are occasionally included along with the wire, however, the prevalence of this practice is unknown.

The combustible portion of wire insulation comprises a great variety of materials, including rubber, paper, cotton, asphalt impregnated fabrics, silk and plastics, such as polyethylene, polypropylene and polyvinyl chloride (PVC). Additionally, the wire itself may have baked-on coatings of plastics, paint or varnish. The type of insulation on the wire depends on the original use of the wire. Table 3-1 presents some information on wire use and types of insulation that may be encountered. Many wire reclamation incinerators are operated with permits that preclude the burning of PVC-coated wire. However, the information in the table shows that most insulated wire contains some PVC or other chlorinated material which may not be readily identified by visual inspection.

(Figure 3-5). The furnace has been moved from another site and had not yet been operated on this site at the time of sampling. The unit has operated about two days/month at about 800 lbs/hr. The incinerator has a primary chamber, a holding chamber, and a secondary chamber afterburner. There is a single burner in each chamber and two in the afterburner. The feed material is low grade aluminum scrap, light fixtures, and aluminum siding with iron bolts. No wire is incinerated. Three ash samples were collected from the primary chamber and one soil sample at the current site from in front of the unit.

Site 6 is Pielet Brothers in McCook. The incinerator is a Coreco Model 9698 and has been operating for about seven years (Figure 3-6). The unit operates about three days/week. Approximately 72 batches/year are run at 3,000 lbs/hr and 1 hr/batch. The unit has a primary chamber with no burners and an afterburner with two natural gas burners. Plant personnel described the feed material as mostly rubber coated wire with tar inhibitors from locomotives. Although an effort is made to avoid PVC coated wire, some PVC wire may be mixed in the feed according to plant personnel. Transformers and capacitors are not burned. Three ash samples were collected from the primary chamber, one soil sample was collected near the ash storage area, and an ash sample was collected from a cement pad in the ash handling area.

Site 7 is Allied Iron & Steel in Peoria. The incinerator is an Emissions Control Corp. Model T100 and has been in operation at least nine years (Figure 3-7). The incinerator is operated 15 to 20 times a year. A batch is about 300 lbs and is a seven-hour run. The unit has a primary chamber and an afterburner. One burner is present in the primary chamber. The feed material is primarily insulated wire, but also electric motors. Three ash samples from inside the incinerator and one soil sample from about four feet from the incinerator were taken.

Site 8 is Westinghouse Electric in Bartonville. The incinerator is a Pollution Control Products Model 150 gas-fired burnoff oven and is at least two years old (Figure 3-8). The incinerator has a primary chamber and an afterburner. The oven is used to burn insulation from the wire cores of electric motors. Two batches/week are run at 10 to 200 lbs/hr and seven hrs/batch. Three ash samples were taken from the primary chamber.

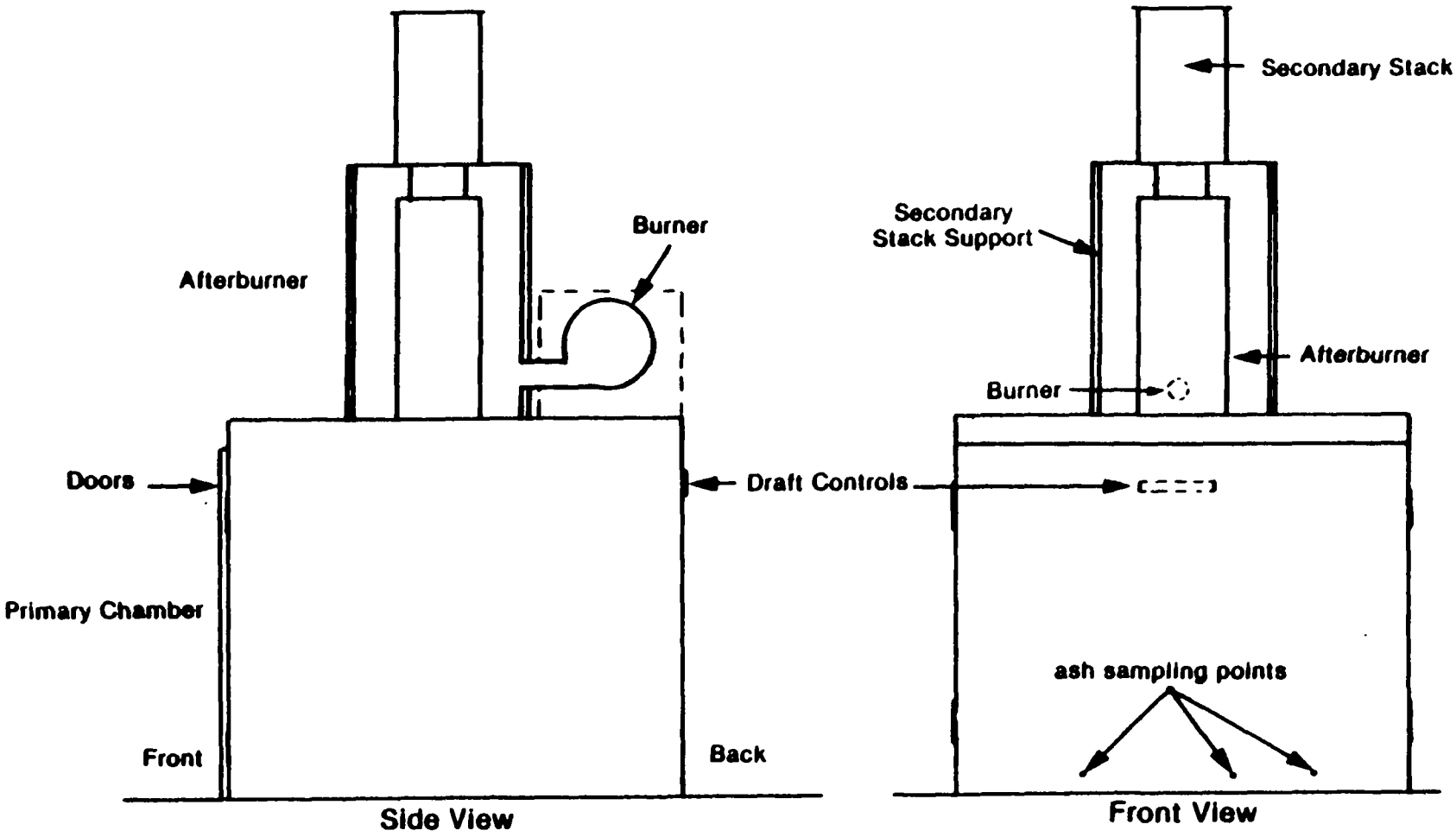


Figure 3-7. Allied Iron and Steel Wire Reclamation Incinerator

full-screen analysis, separates each class of chlorination. The full-screen column can fully resolve 2378-TCDD from the other 21 TCDD isomers. However, on this column, 2378-TCDF coelutes with other TCDF isomers. Therefore, a second analysis, commonly known as a confirmation analysis, is performed to fully resolve 2378-TCDF. The confirmation column can resolve 2378-TCDD as well, and the 2378-TCDD results from either column should agree within experimental error. A more complete description of the analytical method can be found in the case narratives for the two sets of analyses.

As discussed in Section 4.1, the samples were submitted in two batches. The first batch consisted of ten ash samples and the second batch consisted of five ash samples and nine soil samples. For the first batch of ash, all the samples including the method blank samples were fortified at the two ppb level for tetra- through hepta-chlorinated congeners and four ppb level for the octa-chlorinated congener. Following the GC/MS analysis, samples from Alco Steel, Elgin, Lake Salvage, and Allied and the duplicate injection of the Allied sample, were found to contain extremely high levels of PCDD's and PCDF's. The majority of the GC peak saturated the detection system, thus preventing an accurate measurement of the analyte concentration. Dilutions of the final extracts were performed on all high level samples and their reanalysis by GC/MS unfortunately did not provide a viable solution to this problem. A threefold dilution, for instance, performed on samples labeled 2A, 3A and 4A, still resulted in saturated responses. Further dilution of the extract would reduce the response of internal standards making quantification impossible. Consequently, most of the recorded concentration values for the saturated signals are only lower estimates and the real values were estimated to be higher by as much as one order of magnitude. This applied to samples from Alco Steel, Elgin, Lake Salvage and Allied.

Because of this analytical problem, a decision was made to lower the initial sample size and adjust the fortification level of the internal and surrogate standards which are added to the sample before extraction. For the second batch of samples submitted in July, all the ash samples were fortified with twenty ppb of the tetra- through octa-chlorinated internal and surrogate standards and forty ppb of the octa-chlorinated dibenzo-p-dioxin internal standard. The soil samples were fortified at levels five times lower than the

levels for the ash samples. This was accomplished by using the same sample fortification solution described in Table 4-2. The analytical results using the smaller sample size (the July batch) satisfied the QA/QC requirements.

Additional samples for Alco Steel, Elgin, Lake Salvage and Allied were submitted in the July batch. As discussed in Section 4.1, multiple ash samples collected for a single site were discrete grab samples taken from different locations in the chamber. Thus, the "B" and "C" samples analyzed in the second batch are not duplicates of the "A" samples analyzed in the first batch. However, in order to evaluate the first analysis on some basis (although variation in the ash concentration is not accounted for), the analyses are summarized in Table 4-3. The first analyses from Elgin, Lake Salvage and Allied were about 50 percent lower than the second analyses. The first analysis for Alco Steel was about 20 percent higher than the second analysis indicating that in addition to the error caused by the saturated signals in the first batch, some variability in the ash concentration also existed. Thus, the results from the first analyses for these sites are considered questionable and are not discussed any further in this report.

4.3 ANALYTICAL RESULTS

The analytical result for the ash samples are presented in Table 4-4 and the results for the soil samples are presented in Table 4-5. All results in the tables are expressed as ng/g, or ppb. The results in Table 4-4 show that there is a wide range of PCDD/PCDF ash contents between incinerator types. Ash from wire burners (all but Westinghouse, Rock Island and Midwest) have higher PCDD/PCDF contents than ash from the motor burnoff ovens (Westinghouse and Rock Island). Individual samples of wire reclamation incinerator ash have total dioxin and furan contents ranging from 43.8 ng/g up to 62,713 ng/g, whereas samples of ash from motor burnoff ovens have total dioxin and furan concentrations of between 1.46 and 2.28 ng/g.

Table 4-4 also shows that based on the single aluminum sweat furnace, ash from these furnaces have higher PCDD/PCDF contents than ash from motor burnoff ovens at Westinghouse and Rock Island. Also, the ash sample from the aluminum sweat furnace contained 834 ng/g of total PCDD/PCDFs which was lower than the ash concentrations found at four of the seven wire reclamation incinerators studied.

concentrations such as Midland and Midwest can cause as much soil contamination as sites with higher ash concentrations such as Lake Salvage.

And finally, four of the sites, Alco Steel, Elgin, Lake Salvage, and Allied have toxic equivalents in soil which would most likely be at a level of concern in an industrial setting. There is no official USEPA policy for guidance in industrial areas, since each site is handled on a case-by-case basis. However, there is a file maintained for these sites, and the majority of the levels of concern determined at these sites have fallen in the range of 5-15 ng/g (ppb). The upper limit of the determined levels of concern to date has been set at 50 ppb for the cleanup of Johnston Atoll in the Pacific Ocean.

4.3.1. Homologue Distributions

Figures 4-1 through 4-4 present homologue distributions for some of the wire reclamation incinerator ash samples. These homologue distributions are expressed in mole percent of total dioxins or furans measured in the ash in order to remove the effect of different concentrations. The distributions show the relative amount of each of the homologues in the sample. Some differences in distribution can be seen, for example, Allied versus Edelman, Alco Steel, Elgin, Lake Salvage and Pielet Brothers. These differences in distribution may indicate the effect of varying feeds. Further analysis is needed to ascertain if the apparent differences have any significance.

4.4 QUALITY ASSURANCE/QUALITY CONTROL

4.4.1 Sampling Quality Control and Custody

As discussed in Section 4.1, grab samples of incinerator ash and soil were collected using a trowel. Sample containers and any auxiliary sampling equipment were cleaned prior to sample collection according to the prescribed protocols. The cleaned glassware was transported to the sampling location with the Teflon lids tightly in place. After each sample was taken, the jar was sealed, taped and labeled, and the date, time and comments were recorded on the label.

Each sample was given a unique alphanumeric code for sample identification. The sampling date was also recorded. The bottle lids were sealed with Teflon tape and an integrity seal was placed over the lid. Finally, the samples were wrapped in bubblewrap and plastic baggies and packed

TABLE 4-1. NUMBER AND TYPE OF SAMPLES COLLECTED AND SUBMITTED FOR ANALYSIS

Site Name	Number and Type of Samples Collected	Number and Type of Samples Submitted to Lab	ID Number of Samples Submitted for CDD/CDF Analysis
S. Edelman	3 Ash 1 Soil	1 Ash 1 Soil	WRI-1-A WRI-1-GRD
Alco Steel	2 Ash 2 Soil	2 Ash 2 Soil	WRI-2-A-ASH WRI-2-B-ASH WRI-2-C-SOIL (Duplicate Analysis)
Elgin Salvage & Supply	3 Ash 1 Soil	3 Ash 1 Soil	WRI-3-A-ASH WRI-3-B-ASH WRI-3-C-ASH WRI-3-SOIL
Sipi Metals Corp.	0	0	-
Lake Salvage Co.	3 Ash 2 Soil	2 Ash 2 Soil	WRI-4-A-ASH WRI-4-B-ASH WRI-4-GRD WRI-4-SOIL
Midwest Industrial Metals	3 Ash 1 Soil	1 Ash 1 Soil	WRI-5-A-ASH WRI-5-GRD
Pielet Brothers Scrap	3 Ash 2 Soil	1 Ash 1 Soil	WRI-6-A-ASH WRI-6-GRD
Allied Iron & Steel	3 Ash 1 Soil	2 Ash 1 Soil	WRI-7-A-ASH (Duplicate Analysis) WRI-7-B-ASH WRI-7-D-SOIL
Westinghouse	3 Ash	1 Ash	WRI-8-A
Sol Tick & Co.	0	0	
Midland Iron & Steel	3 Ash 1 Soil	1 Soil 1 Ash	WRI-10-A WRI-10-D-SOIL
Rock Island	3 Ash	1 Ash	WRI-11-A
Subtotal	29 Ash 11 Soil	15 Ash 10 Soil	
Grand Total	40	25	

TABLE 4-3. COMPARISON OF THE FIRST AND SECOND ANALYSES FOR ALCO STEEL, ELGIN,[a] LAKE SALVAGE AND ALLIED

	ALCO STEEL		ELGIN			LAKE SALVAGE		ALLIED		
Congener	1st (Diluted)	2nd	1st (Diluted)	2nd "B"	2nd "C"	1st (Diluted)	2nd	1st (Diluted)	1st (DUP)	2nd
2378-TCDD	9.89	10.7	24.7	40.3	29.3	17.5	26.4	10.7	8.53 [0.061]	
OTHER TCDD	86.7	138	88.5	562	375	15.0	83.5	76.3	61.9	7.88
12378-PCDD	32.9	28.4	49.0	110	70.6	46.5	60.6	14.7	9.90 [0.089]	
OTHER PCDD	340	274	421	1484	1053	172	355	109	78.8	48.0
123478-HxCDD	42.4	43.1	71.0	156	107	41.9	92.0	8.60	7.28 [0.073]	
123678-HxCDD	85.9	92.3	177	360	289	88.3	203	19.6	12.2	10.0
123789-HxCDD	45.0	38.1	204	440	329	85.1	192	30.2	20.5	14.0
OTHER HxCDD	599	593	1140	3003	2061	376	863	84.8	56.6	102
1234678-HpCDD	612	765	1231	2687	2437	689	1285	37.4	26.9	86.9
OTHER HpCDD	436	470	907	2056	1683	403	672	36.9	26.3	97.8
OCDD	1868	1702	2915	5494	4746	1638	3554	77.2	68.4	147
TOTAL PCDD	4157	4155	7228	16393	13180	3574	7385	505	377	513
2378-TCDF	477	796	550	1302	864	1929	2264	93.7	56.8	10.5
OTHER TCDF	1594	1724	1683	5556	4913	901	6291	121	93.9	258
12378-PCDF	899	618	618	930	993	1420	2994	22.8	13.8	8.93
23478-PCDF	446	413	503	1178	889	1043	2216	22.6	14.9	25.1
OTHER PCDF	1930	1887	1938	5873	4756	4401	6283	105	56.5	170
123478-HxCDF	1919	1144	1190	1805	1900 [0.013]		3981	23.8	27.4	66.9
123678-HxCDF	508	600	527	1171	962 [0.013]	[0.045]	[ND]	[ND]		20.0
234678-HxCDF	351	398	545	1155	919	613	1367	23.8	14.6	43.8
123789-HxCDF	155	208	127	242	189	460	1100	8.87	18.0	5.90
OTHER HxCDF	1537	1837	1278	4394	3650	3737	1352	103	49.0	107
1234678-HpCDF	2415	1647	1444	2646	3008	1404	3198	31.9	24.9	166
1234789-HpCDF	1284	1640	948	2022	1783	1600	3544	23.3	20.3	16.6
OTHER HpCDF	1267	1422	1266	2530	2293	1670	3272	40.3	25.0	54.0
OCDF	11650	5656	5716	8014	8603	6699	17467	72.4	65.9	92.3
TOTAL PCDF	26431	19991	18334	38818	35723	25876	55328	693	481	1046
TOTAL PCDD+PCDF	30589	24146	25562	55211	48903	29450	62713	1198	858	1558

[a] The first analysis resulted in saturated peaks due to unexpected high concentrations. Thus, these values are a minimum for the sample. The 2nd analysis represents the analysis of a different ash sample. The extracted sample size was reduced and the internal standards were increased for the 2nd analyses. These analyses satisfied the QA/QC requirements.

TABLE 4-4. CDD/CDF CONCENTRATIONS MEASURED IN THE ASH FROM ILLINOIS WIRE RECLAMATION INCINERATORS

Congener	CONCENTRATION (ng/g)[a]										
	EDELMAN	ALCO STEEL	ELGIN "B"	ELGIN "C"	LAKE SALVAGE	MIDWEST[b]	PIELET BROTHERS	ALLIED	WESTING-HOUSE[c]	MIDLAND	ROCK ISLAND[c]
2378-TCDD	[0.001]	10.7	40.3	29.3	26.4	0.290	0.036	[0.061]	[0.019]	0.051	[0.001]
OTHER TCDD	0.000	138	562	375	83.5	15.8	0.951	7.88	0.010	1.62	0.000
12378-PCDD	[0.037]	26.4	110.3	70.6	60.6	1.27	0.187	[0.089]	0.010	0.311	[0.001]
OTHER PCDD	0.252	274	1484	1053	355	36.2	3.89	48.0	0.020	6.62	0.000
123478-HxCDD	[0.003]	43.1	156	107	92.0	1.84	0.264	[0.073]	0.010	0.503	[0.001]
123678-HxCDD	0.121	92.3	360	289	203	5.29	0.936	10.0	0.010	1.55	[0.001]
123789-HxCDD	0.152	38.1	440	329	192	6.68	1.25	14.0	0.020	2.08	[0.003]
OTHER HxCDD	0.828	593	3003	2061	863	58.9	7.75	102	0.050	12.9	0.039
1234678-HpCDD	1.09	765	2687	2437	1285	36.8	9.21	86.9	0.060	14.6	0.108
OTHER HpCDD	1.26	470	2056	1683	672	37.0	8.85	97.8	0.050	13.0	0.071
OCDD	2.62	1702	5494	4746	3554	57.8	17.4	147	0.160	26.8	0.498
TOTAL PCDD	6.31	4155	16393	13180	7385	258	50.7	513	0.400	80.1	0.716
2378-TCDF	0.090	796	1302	864	2264	3.00	1.45	10.5	[0.04]	1.1	[0.10]
OTHER TCDF	1.99	1724	5556	4913	6291	125	19.4	258	0.250	16.16	0.096
12378-PCDF	0.172	618	930	993	2994	3.55	1.48	8.93	0.030	2.284	0.012
23478-PCDF	0.498	413	1178	889	2216	9.35	2.78	25.1	0.040	3.262	0.039
OTHER PCDF	3.63	1887	5873	4756	6283	95.0	17.6	170	0.090	16.6	0.283
123478-HxCDF	2.81	1144	1805	1900	3981	32.3	8.34	66.9	0.090	7.445	0.141
123678-HxCDF	0.768	600	1171	962	[0.045]	10.1	2.63	20.0	0.030	2.919	0.052
234678-HxCDF	1.13	398	1155	919	1367	19.6	4.52	43.8	0.030	5	0.066
123789-HxCDF	[0.001]	208	242	189	1100	3.76	[0.001]	5.90	[0.001]	[0.001]	[0.001]
OTHER HxCDF	4.39	1837	4394	3650	1352	61.7	13.2	107	0.080	11	0.229
1234678-HpCDF	9.23	1647	2646	3008	3198	71.4	24.7	166	0.200	13	0.364
1234789-HpCDF	0.741	1640	2022	1783	3544	12.3	4.78	16.6	0.020	4	[0.043]
OTHER HpCDF	3.49	1422	2530	2293	3272	34.1	11.3	54.0	0.000	9	0.106
OCDF	8.54	5656	8014	8603	17467	94.7	28.0	92.3	0.200	21	0.172
TOTAL PCDF	37.5	19991	38818	35723	55328	576	140	1046	1.06	113	1.56
TOTAL PCDD+PCDF	43.8	24146	55211	48903	62713	834	191	1558	1.46	193	2.28

[a] [] indicates the minimum detection limit for an undetected compound.

[b] Aluminum sweat furnace.

[c] Motor burn-off oven.

TABLE 4-6. SUMMARY OF INCINERATOR OPERATING VARIABLES AND ASH CONCENTRATIONS FOR ILLINOIS WIRE RECLAMATION INCINERATORS

Site	Sampling Location 1°	Sampling Location 2°	Location of Burners 1°	Location of Burners 2°	Location of Burners AB	Heat Input MMBtu/hr 1°	Heat Input MMBtu/hr 2°	Heat Input MMBtu/hr AB	Fuel Type	Feed Quantity lb/batch	Copper Yield %	Temperature °F 1°	Temperature °F 2°	Temperature °F AB	Type of Wire/Feed	Average Ash Concentrations[a] PCDD ng/g	PCDF ng/g	Total PCDD/PCDF ng/g	2378-TCDD Equivalence ng/g
S. Edelman	-	x		x	x	.6	.6	1.2	Nat. Gas	300-500	70-80	600-800	1,400	1,800-2,200	Insulated copper wire	6.31	37.5	43.8	0.153
Alco Steel	-	x	-	-	x	-	-	-	Fuel Oil	220	50-75	-	-	2,100	Copper wire	4,155	19,991	24,146	249
Elgin[b]	-	x	x	-	x	.9		1.2	Nat. Gas	300-500	50-75	-	-	-	Rubber-coated; variable	14,787	37,271	52,057	494
Lake[c]	-	x	x	x	x	.45	.9	.45	Nat. Gas	450	-	-	-	-	Heavy cable; house wire	7,385	55,328	62,713	912
Midwest[d]	x	-	x	x	x	2	2	2	Nat. Gas	2,000	NA	1,600	-	1500-1600	Low grade aluminum & iron scrap	258	576	834	4.43
Pielet	x	-	-	-	x	-	6	-	Nat. Gas	500-600	85	-	-	1,650	Rubber-coated locomotive wire	50.7	140	191	1.06
Allied	x	-	-	-	x	-	-	1.05	Diesel	300-400	30-40	-	-	-	Domestic scrap wire	513	1046	1558	7.85
Westinghouse[e]	x	-	x	-	x	.5	-	-	Nat. Gas	-	NA	700	-	-	Electric motors and windings	0.400	1.06	1.46	0.016
Midland	x	-	-	-	x	-	3	-	Nat. Gas	1,000	30-40	-	-	1,400	#1 & #2 scrap wire	80.1	113	193	1.31
Rock Island[e]	x	-	-	x	-	-	-	-	Nat. Gas	750	NA	-	750-850	400-1,200	Electric motors	0.716	1.56	2.28	0.009

1° means primary chamber
2° means secondary chamber
AB means afterburner

[a] Ash samples could not be collected at Sol Tick and Sipi Metals.

[b] Primary and secondary chamber ashes are quenched by water baths.

[c] Lake Salvage is equipped with sprays between the primary and secondary chamber, these water sprays were not used. The Lake Salvage concentration is the average of two samples.

[d] Aluminum sweat furnace.

[e] Motor burnoff oven.

TABLE 4-8. 2378-TCDD TOXIC EQUIVALENT CONCENTRATIONS FOR THE ILLINOIS WRI ASH SAMPLES

Congener	2378-TCDD TOXIC EQUIVALENTS FACTORS	2378-TCDD TOXIC EQUIVALENTS (ng/g)[a] EDELMAN	ALCO STEEL	ELGIN "B"	ELGIN "C"	LAKE SALVAGE	MIDWEST[b]	PIELET BROTHERS	ALLIED	WESTING-HOUSE[c]	MIDLAND	ROCK ISLAND[c]
2378-TCDD	1	0.000	10.7	40.3	29.3	26.4	0.290	0.036	0.000	0.000	0.051	0.000
OTHER TCDD	0.01	0.000	1.38	5.62	3.75	0.835	0.158	0.010	0.079	0.000	0.016	0.000
12378-PCDD	0.5	0.000	14.2	55.2	35.3	30.3	0.635	0.094	0.000	0.005	0.156	0.000
OTHER PCDD	0.005	0.001	1.37	7.42	5.27	1.77	0.181	0.019	0.240	0.000	0.033	0.000
123478-HxCDD	0.04	0.000	1.72	6.22	4.29	3.68	0.074	0.011	0.000	0.000	0.020	0.000
123678-HxCDD	0.04	0.005	3.69	14.4	11.5	8.12	0.212	0.037	0.398	0.000	0.062	0.000
123789-HxCDD	0.04	0.006	1.52	17.6	13.1	7.69	0.267	0.050	0.561	0.001	0.083	0.000
OTHER HxCDD	0.0004	0.000	0.237	1.20	0.825	0.345	0.024	0.003	0.041	0.000	0.005	0.000
1234678-HpCDD	0.001	0.001	0.765	2.69	2.44	1.28	0.037	0.009	0.087	0.000	0.015	0.000
OTHER HpCDD	0.00001	0.000	0.005	0.021	0.017	0.007	0.000	0.000	0.001	0.000	0.000	0.000
OCDD	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL PCDD												
2378-TCDF	0.1	0.009	79.6	130	86.4	226	0.300	0.145	1.048	0.000	0.109	0.000
OTHER TCDF	0.001	0.002	1.72	5.56	4.91	6.29	0.125	0.019	0.258	0.000	0.016	0.000
12378-PCDF	0.1	0.017	61.8	93.0	99.3	299	0.355	0.148	0.893	0.003	0.228	0.001
23478-PCDF	0.1	0.050	41.3	118	88.9	222	0.935	0.278	2.511	0.004	0.326	0.004
OTHER PCDF	0.001	0.004	1.89	5.87	4.76	6.28	0.095	0.018	0.170	0.000	0.017	0.000
123478-HxCDF	0.01	0.028	11.4	18.1	19.0	39.8	0.323	0.083	0.669	0.001	0.074	0.001
123678-HxCDF	0.01	0.008	6.00	11.7	9.62	0.000	0.101	0.026	0.200	0.000	0.029	0.001
234678-HxCDF	0.01	0.011	3.98	11.6	9.19	13.7	0.196	0.045	0.438	0.000	0.048	0.001
123789-HxCDF	0.01	0.000	2.08	2.42	1.89	11.0	0.038	0.000	0.059	0.000	0.000	0.000
OTHER HxCDF	0.0001	0.000	0.184	0.439	0.365	0.135	0.006	0.001	0.011	0.000	0.001	0.000
1234678-HpCDF	0.001	0.009	1.65	2.65	3.01	3.20	0.071	0.025	0.168	0.000	0.013	0.000
1234789-HpCDF	0.001	0.001	1.64	2.02	1.78	3.54	0.012	0.005	0.017	0.000	0.004	0.000
OTHER HpCDF	0.00001	0.000	0.014	0.025	0.023	0.033	0.000	0.000	0.001	0.000	0.000	0.000
OCDF	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL PCDF												
TOTAL PCDD+PCDF	2378-TCDD TOXIC EQUIVALENT	0.153	249	552	435	912	4.43	1.06	7.85	0.016	1.31	0.009

[a] Not detected congeners are considered zero for calculating 2378-TCDD toxic equivalents.

[b] Aluminum sweat furnace.

[c] Motor burn-off oven.

TABLE 4-9. 2378-TCDD TOXIC EQUIVALENT CONCENTRATIONS FOR THE ILLINOIS WRI SOIL SAMPLES

		2378-TCDD TOXIC EQUIVALENTS (ng/g)[a]								
			ALCO STEEL			LAKE SALVAGE[c]				
Congener	2378-TCDD TOXIC EQUIVALENTS FACTORS	EDELMAN	"C" (b)	"D"	ELGIN	ASH STORAGE AREA	INCINERATOR AREA	MIDWEST	PIELET BROTHERS	ALLIED	MIDLAND
2378-TCDD	1	0.020	3.56	0.000	1.53	0.090	0.169	0.000	0.000	0.120	0.000
OTHER TCDD	0.01	0.003	0.293	0.008	0.288	0.007	0.005	0.021	0.000	0.023	0.004
12378-PCDD	0.5	0.085	5.34	0.095	2.55	0.125	0.167	0.230	0.000	0.000	0.080
OTHER PCDD	0.005	0.010	0.483	0.009	0.425	0.012	0.015	0.032	0.001	0.040	0.009
123478-HxCDD	0.04	0.010	0.509	0.009	0.245	0.013	0.019	0.021	0.000	0.000	0.009
123678-HxCDD	0.04	0.028	1.24	0.020	0.871	0.035	0.042	0.066	0.003	0.072	0.021
123789-HxCDD	0.04	0.020	1.45	0.048	0.985	0.042	0.032	0.084	0.006	0.106	0.031
OTHER HxCDD	0.0004	0.002	0.062	0.002	0.070	0.003	0.003	0.006	0.000	0.007	0.002
1234678-HpCDD	0.001	0.007	0.198	0.007	0.216	0.010	0.010	0.016	0.001	0.018	0.004
OTHER HpCDD	0.00001	0.000	0.001	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000
OCDD	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL PCDD											
2378-TCDF	0.1	0.047	33.5	0.236	2.20	0.258	2.19	0.173	0.025	0.233	0.418
OTHER TCDF	0.001	0.007	0.771	0.014	0.175	0.014	0.034	0.023	0.002	0.027	0.022
12378-PCDF	0.1	0.035	34.9	0.250	2.69	0.369	2.98	0.202	0.000	0.216	0.243
23478-PCDF	0.1	0.136	25.5	0.244	3.76	0.280	1.02	0.350	0.000	0.470	0.291
OTHER PCDF	0.001	0.007	0.724	0.013	0.204	0.013	0.033	0.022	0.002	0.028	0.013
123478-HxCDF	0.01	0.043	4.54	0.081	1.26	0.122	0.453	0.127	0.012	0.169	0.071
123678-HxCDF	0.01	0.014	2.63	0.025	0.407	0.039	0.116	0.043	0.004	0.054	0.022
234678-HxCDF	0.01	0.024	0.928	0.024	0.515	0.042	0.082	0.062	0.010	0.088	0.025
123789-HxCDF	0.01	0.006	0.907	0.000	0.048	0.006	0.115	0.003	0.000	0.000	0.003
OTHER HxCDF	0.0001	0.001	0.072	0.001	0.018	0.001	0.001	0.002	0.000	0.002	0.001
1234678-HpCDF	0.001	0.014	0.575	0.016	0.264	0.027	0.052	0.039	0.006	0.049	0.014
1234789-HpCDF	0.001	0.002	0.618	0.000	0.070	0.007	0.026	0.007	0.001	0.006	0.003
OTHER HpCDF	0.00001	0.000	0.004	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
OCDF	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL PCDF											
TOTAL PCDD+PCDF	2378-TCDD TOXIC EQUIVALENT	0.520	119	1.10	18.8	1.51	7.57	1.53	0.074	1.73	1.29

[a] Not detected congeners are considered zero for calculating 2378-TCDD toxic equivalents.

[b] Average of duplicate analyses.

[c] Aluminum sweat furnace.

TABLE 4-10. COMPARISON OF ASH AND SOIL TEF'S BY SITE

Site	Ash (TEF)	Soil (TEF)
Lake Salvage	912	1.51[a]
		7.57[b]
Elgin	552	18.8
	435	
Alco Steel	249	119 [c]
		1.10[d]
Allied	7.85	1.73
Midwest	4.43	1.53
Midland	1.31	1.29
Pielet	1.06	0.074
Edelman	0.153	0.520
Westinghouse	0.016	N/A
Rock Island	0.009	N/A

N/A = Soil samples were not collected and analyzed for these sites.

[a]Collected from ash storage area.

[b]Collected from near incinerator.

[c]Collected in front of the primary and secondary chambers. Result is an average of duplicate analyses.

[d]Collected near the afterburner.

25-Apr-88

SUMMARY OF CDD/CDF ANALYTICAL DATA FOR THE ILLINOIS WIRE RECLAMATION INCINERATOR ASH SAMPLES

RAW DATA

Congener	EDELMAN 05-18-87	ALCO 7-13-87	ELGIN "B"	ELGIN "C"	LAKE SALVAGE 7-11-87	MIDWEST 05-15-87	PIELET 05-18-87	ALLIED 07-10-87	WESTING-HOUSE	MIDLAND	ROCK
2378-TCDD	[0.001]	10.67	40.26	29.34	26.4	0.29	0.036	[0.061]	[0.019]	0.051	[0.001]
TOTAL TCDD	[0.147]	148.17	601.99	403.88	109.89	16.04	0.987	7.88	0.01	1.671	[0.001]
12378-PCDD	[0.037]	28.36	110.34	70.6	60.55	1.27	0.187	[0.089]	0.01	0.311	[0.001]
TOTAL PCDD	0.252	302.6	1594.71	1124.06	415.47	37.48	4.074	48.02	0.03	6.928	[0.008]
123478-HxCDD	[0.003]	43.06	155.58	107.19	92.03	1.84	0.264	[0.073]	0.01	0.503	[0.001]
123678-HxCDD	0.121	92.29	360.04	288.73	202.96	5.29	0.936	9.95	0.01	1.551	[0.001]
123789-HxCDD	0.152	38.07	440.19	328.62	192.2	6.68	1.247	14.02	0.02	2.079	[0.003]
TOTAL HxCDD	1.101	766.89	3958.89	2785.79	1349.82	72.72	10.192	125.51	0.09	17.068	0.039
1234678-HpCDD	1.087	765.38	2686.5	2437.29	1284.54	36.84	9.214	86.92	0.06	14.612	0.108
TOTAL HpCDD	2.342	1235.5	4742.55	4120.25	1956.4	73.8	18.064	184.73	0.11	27.618	0.179
OCDD	2.618	1701.74	5494.47	4746.26	3553.56	57.81	17.425	146.78	0.16	26.772	0.498
2378-TCDF	0.09	795.78	1301.75	864.36	2263.55	3	1.45	10.48	[0.04]	1.09	[0.10]
TOTAL TCDF	2.078	2519.87	6857.84	5777.16	8554.12	128.36	20.889	268.91	0.25	17.247	0.096
12378-PCDF	0.172	618.34	929.83	993.25	2993.75	3.55	1.475	8.93	0.03	2.284	0.012
23478-PCDF	0.498	412.99	1178.34	889.26	2218.25	9.35	2.782	25.11	0.04	3.262	0.039
TOTAL PCDF	4.296	2918.14	7981.34	6638.1	11492.84	107.92	21.888	204.11	0.16	22.123	0.334
123478-HxCDF	2.81	1144.37	1805.02	1900.07	3981.07	32.29	8.341	66.94	0.09	7.445	0.141
123678-HxCDF	0.768	599.84	1170.89	962.04	[0.045]	10.09	2.628	19.96	0.03	2.919	0.052
234678-HxCDF	1.126	397.91	1155.43	918.69	1366.86	19.57	4.517	43.82	0.03	4.794	0.066
123789-HxCDF	[0.001]	208.14	241.87	189.19	1099.67	3.76	[0.001]	5.9	[0.001]	[0.001]	[0.001]
TOTAL HxCDF	9.091	4187.65	8767.59	7620.32	7799.58	127.46	28.733	244	0.23	26.491	0.488
1234678-HpCDF	9.225	1646.54	2645.76	3008.12	3198.24	71.43	24.722	165.61	0.2	12.597	0.364
1234789-HpCDF	0.741	1640.48	2021.94	1783.05	3544.35	12.28	4.778	16.56	0.02	4.241	[0.043]
TOTAL HpCDF	13.459	4709.27	7197.38	7084.59	10014.32	117.77	40.781	236.21	0.22	25.83	0.47
OCDF	8.539	5656	8013.86	8602.6	17466.9	94.71	27.957	92.29	0.2	21.03	0.172

25-Apr-88

SUMMARY OF CDD/CDF ANALYTICAL DATA FOR THE ILLINOIS WIRE RECLAMATION INCINERATOR ASH SAMPLES
FOR MULTIPLE SAMPLES FROM ONE SITE

Congener	ALCO 5/18/87	ALCO 7-13-87	ELGIN "A"	ELGIN "B"	ELGIN "C"	LAKE SALVAGE 5/15/87	LAKE SALVAGE 7-11-87	ALLIED 5/15/88	ALLIED 5/15/88 DUP	ALLIED 07-10-87
2378-TCDD	9.89	10.67	24.7	40.26	29.34	17.5	26.4	10.71	8.53 [0.061]	
TOTAL TCDD	96.61	148.17	113.18	601.99	403.88	32.45	109.89	87.04	70.42	7.88
12378-PCDD	32.87	28.36	48.98	110.34	70.6	46.53	60.55	14.72	9.9 [0.089]	
TOTAL PCDD	372.37	302.6	469.48	1594.71	1124.08	219.01	415.47	123.27	88.68	48.02
123478-HxCDD	42.4	43.06	71.02	155.58	107.19	41.88	92.03	8.6	7.28 [0.073]	
123678-HxCDD	85.9	92.29	176.66	360.04	288.73	88.34	202.96	19.64	12.23	9.95
123789-HxCDD	45	38.07	203.88	440.19	328.62	85.06	192.2	30.24	20.5	14.02
TOTAL HxCDD	772.18	766.89	1591.9	3958.89	2785.79	591.74	1349.82	143.28	96.56	125.51
1234678-HpCDD	612.33	765.38	1231.13	2686.5	2437.29	689.12	1284.54	37.4	26.94	86.92
TOTAL HpCDD	1048.74	1235.5	2137.79	4742.55	4120.25	1091.87	1956.4	74.28	53.24	184.73
OCDD	1867.58	1701.74	2915.36	5494.47	4746.26	1638.45	3553.56	77.22	68.44	146.78
2378-TCDF	476.95	795.78	549.62	1301.75	864.36	1928.77	2263.55	93.73	36.8 ~~88.25~~	10.48
TOTAL TCDF	2070.46	2519.87	2232.95	6857.84	5777.16	2830.23	8554.12	215.05	150.72	268.91
12378-PCDF	898.96	618.34	618	929.83	993.25	1419.94	2993.75	22.79	13.78	8.93
23478-PCDF	445.79	412.99	503.18	1178.34	889.26	1042.83	2216.25	22.58	14.91	25.11
TOTAL PCDF	3274.4	2918.14	3059.05	7981.34	6638.1	6863.8	11492.84	150.23	85.23	204.11
123478-HxCDF	1919.38	1144.37	1190.22	1805.02	1900.07	[0.013]	3981.07	23.76	27.42	66.94
123678-HxCDF	508.46	599.84	527.34	1170.89	962.04	[0.013]	[0.045]	[ND]	[ND]	19.96
234678-HxCDF	350.67	397.91	544.69	1155.43	918.69	613.37	1366.86	23.79	14.57	43.82
123789-HxCDF	155.35	208.14	127.49	241.87	189.19	459.6	1099.67	8.87	17.99	5.9
TOTAL HxCDF	4470.83	4187.65	3667.43	8767.59	7620.32	4809.9	7799.58	159.49	108.95	244
1234678-HpCDF	2414.86	1646.54	1444.04	2645.76	3008.12	1403.75	3198.24	31.93	24.93	165.61
1234789-HpCDF	1284.1	1640.48	948.39	2021.94	1783.05	1599.79	3644.35	23.32	20.31	16.56
TOTAL HpCDF	4965.83	4709.27	3658.64	7197.38	7084.59	4673.21	10014.32	95.59	70.26	236.21
OCDF	11649.57	5656	5716.26	8013.86	8602.6	6698.99	17466.9	72.44	65.93	92.29

25-Apr-88

SUMMARY OF CDD/CDF ANALYTICAL DATA FOR THE ILLINOIS WIRE RECLAMATION INCINERATOR SOIL SAMPLES

Congener	EDELMAN	ALCO STEEL		ELGIN	LAKE SALVAGE		MIDWEST	PIELET BROTHERS	ALLIED	MIDLAND	ALCO "C" DUP	ALCO "C" DUP
		"C" (a)	"D"		ASH STORAGE AREA	INCINERATOR AREA						
2378-TCDD	0.02	3.56	{0.04}	1.53	0.09	0.169	{0.20}	[0.003]	0.12	{0.04}	3.46	3.66
TOTAL TCDD	0.29	32.83	0.82	30.29	0.81	0.699	2.06	{0.04}	2.38	0.44	28.59	37.07
12378-PCDD	0.17	10.67	0.19	5.1	0.25	0.334	0.46	{0.02}	[1.06]	0.16	10.25	11.09
TOTAL PCDD	2.22	107.305	2.03	90.1	2.68	3.275	6.86	0.17	8.05	2.01	96.71	117.9
123478-HxCDD	0.24	12.735	0.22	6.12	0.32	0.478	0.52	{0.03}	[1.627]	0.23	12.67	12.8
123678-HxCDD	0.7	30.985	0.5	21.78	0.88	1.044	1.64	0.08	1.81	0.52	31.35	30.62
123789-HxCDD	0.5	36.305	1.2	24.62	1.04	0.808	2.1	0.16	2.64	0.77	35.71	36.9
TOTAL HxCDD	6.51	234.61	6.04	227.79	8.51	9.165	18.18	0.7	20.89	6.12	223.32	245.9
1234678-HpCDD	7.3	197.78	6.81	215.84	9.59	9.603	15.78	1.44	17.75	4.19	200.71	194.85
TOTAL HpCDD	13.32	317.62	14.17	369.92	17.35	16.805	29.46	3.01	34.12	7.99	316.4	318.84
OCDD	20.87	268.18	23.61	548.86	28.79	25.342	31.35	10.54	40.83	8.07	132.2	404.16
2378-TCDF	0.47	334.9	2.36	21.99	2.58	21.94	1.73	0.25	2.33	4.18	355.65	314.15
TOTAL TCDF	7.09	1106.125	15.88	197.05	16.88	55.998	24.82	1.95	29.11	26.11	1259.65	952.6
12378-PCDF	0.35	349.09	2.5	26.85	3.69	29.814	2.02	{0.16}	2.16	2.43	412.13	286.05
23478-PCDF	1.36	254.85	2.44	37.57	2.8	10.195	3.5	{0.30}	4.7	2.91	259.68	250.02
TOTAL PCDF	8.95	1328.1	18.15	268.1	19.23	73.15	27.71	1.76	34.97	17.96	1288.84	1367.36
123478-HxCDF	4.26	454.355	8.13	126.26	12.17	45.253	12.66	1.22	16.89	7.13	543.53	365.18
123678-HxCDF	1.38	263.165	2.49	40.71	3.88	11.552	4.33	0.38	5.37	2.19	286.79	239.54
234678-HxCDF	2.38	92.765	2.35	51.48	4.24	8.225	6.19	1.02	8.77	2.51	94.31	91.22
123789-HxCDF	0.58	90.69	{0.38}	4.8	0.61	11.501	0.32	[0.003]	[0.007]	0.34	92.57	88.81
TOTAL HxCDF	15.18	1624.825	22.75	402.03	34.83	89.192	40.43	4.32	55.59	21.32	1821.52	1428.13
1234678-HpCDF	14.44	574.745	15.98	263.58	26.97	51.519	39.14	6.42	49.13	13.56	692.85	456.64
1234789-HpCDF	2.38	617.635	[0.012]	70.13	6.56	25.838	7.39	0.68	6.2	2.98	711.5	523.77
TOTAL HpCDF	23.16	1637.845	29.39	468.05	44.99	105.642	62.74	9	73.03	21.28	1880.61	1395.08
OCDF	29.24	1545.3	52.77	576.85	67.79	210.88	75.86	17.55	53.1	18.77	905.44	2185.16

Allied Iron + Steel TRIANGLE LABORATORIES, INC.
PCDD/PCDF ANALYSIS

(7)

ANALYST	MDC	FILE #	M870884
DATE	5/15/87	CONCAL #	M870877
SAMPLE WEIGHT	10.78	TLI #	8701368
SAMPLE ID	WRI-7A		

NAME	CONC. (ppb)	NUMBER	DL	EMPC	RATIO	RT
2378-TCDD >>	10.71				0.82	26.36
TOTAL TCDD >>	87.04	13			0.82	
12378-PCDD >>	14.72				0.73	32.37
TOTAL PCDD >>	123.27	12			0.71	
123478-HxCDD >>	8.60				1.31	37.09
123678-HxCDD >>	19.64				1.18	37.18
123789-HxCDD >>	30.24				1.21	37.45
TOTAL HxCDD >>	143.28	7			1.14	
1234678-HpCDD >>	37.40				1.07	43.57
TOTAL HpCDD >>	74.28	2			1.03	
OCDD >>	77.22				0.99	50.07
2378-TCDF >>	25.29				1.01	25.59
TOTAL TCDF >>	215.05	13			0.78	-
12378-PCDF >>	22.79				0.86	31.10
23478-PCDF >>	22.58				0.89	32.08
TOTAL PCDF >>	150.23	12			1.00	
123478-HxCDF >>	23.76				0.10	36.00
123678-HxCDF	ND				1.00	
234678-HxCDF >>	23.79				1.02	37.01
123789-HxCDF >>	8.87				1.24	38.05
TOTAL HxCDF >>	159.49	10			1.07	
1234678-HpCDF >>	31.93				0.97	42.27
1234789-HpCDF >>	23.32				1.39	44.33
TOTAL HpCDF >>	95.59	4			0.97	
OCDF >>	72.44				0.97	50.18

SURROGATE RESULTS SUMMARY

NAME	CONC. (ppb)	% RECOVERY	RATIO	RT
13C12-TCDF	1.77	95.5	0.74	25.55
37Cl-TCDD	1.77	95.4		26.37
13C12-HxCDF	2.35	126.9	0.56	36.08

INTERNAL STANDARDS RECOVERY RESULTS

NAME	CONC. (ppb)	% RECOVERY	RATIO	RT
2378-13C12-TCDD	2.14	115.3	0.78	26.36
13C12-PCDD	2.28	122.9	0.62	32.35
13C12-HxCDD	1.73	93.3	1.28	37.15
13C12-HpCDD	1.96	105.5	1.06	44.00
13C12-OCDD	3.95	106.5	0.92	50.16

TRIANGLE LABORATORIES, INC
2,3,7,8-TCDD/TCDF ANALYSIS

ANALYST	JAJ	FILE #	M870997
DATE	5-13-87	CONCAL #	M870993
SAMPLE WEIGHT	10.78	TLI #	8701368
SAMPLE ID	WRI 7A		

NAME	CONC (ng/g)	DL	RATIO	RT
2378-TCDF	93.73		0.805	18.56
2378-TCDD	13.96		0.781	16.10

SURROGATE RESULTS SUMMARY

NAME	CONC (ng/g)	% RECOVERY	RATIO	RT
13C12-TCDF	1.93	104.12	0.804	18.55
37Cl-TCDD	2.14	115.24		16.10

INTERNAL STANDARDS RECOVERY RESULTS

NAME	CONC (ng/g)	% RECOVERY	RATIO	RT
2378-13C12-TCDD	1.70	91.74	0.783	16.09

Allied Iron + Steel
WRI-7-A - Duplicate

TRIANGLE LABORATORIES, INC.
PCDD/PCDF ANALYSIS

7 dup

ANALYST	MDC	FILE #	M870885
DATE	5/17/87	CONCAL #	M870877
SAMPLE WEIGHT	10.21	TLI #	8701368
SAMPLE ID	WRI-7DUP		

NAME	CONC. (ppb)	NUMBER	DL	EMPC	RATIO	RT
2378-TCDD	8.53				0.89	26.55
TOTAL TCDD	70.42	13			0.80	
12378-PCDD	9.90				0.81	32.35
TOTAL PCDD	88.68	12			0.74	
123478-HxCDD	7.28				1.26	37.09
123678-HxCDD	12.23				1.09	37.19
123789-HxCDD	20.50				1.08	37.41
TOTAL HxCDD	96.56	7			1.10	
1234678-HpCDD	26.94				1.00	43.57
TOTAL HpCDD	53.24	2			1.00	
OCDD	68.44				0.95	50.08
2378-TCDF	16.91				0.96	26.01
TOTAL TCDF	150.72	13			0.92	
12378-PCDF	13.78				0.87	31.09
23478-PCDF	14.91				0.92	32.08
TOTAL PCDF	85.23	10			0.92	
123478-HxCDF	27.42				1.03	35.59
123678-HxCDF	ND				1.00	
234678-HxCDF	14.57				1.01	37.02
123789-HxCDF	17.99				1.08	38.11
TOTAL HxCDF	108.95	10			1.00	
1234678-HpCDF	24.93				0.97	42.27
1234789-HpCDF	20.31				0.98	44.34
TOTAL HpCDF	70.26	4			1.00	
OCDF	65.93				0.97	50.18

SURROGATE RESULTS SUMMARY

NAME	CONC. (ppb)	% RECOVERY	RATIO	RT
13C12-TCDF	1.80	91.7	0.75	25.55
37Cl-TCDD	1.90	96.9		26.37
13C12-HxCDF	2.10	107.0	0.64	36.10

INTERNAL STANDARDS RECOVERY RESULTS

NAME	CONC. (ppb)	% RECOVERY	RATIO	RT
2378-13C12-TCDD	4.72	241.2	0.81	26.35
13C12-PCDD	5.11	260.7	0.60	32.35
13C12-HxCDD	1.98	101.2	1.28	37.16
13C12-HpCDD	1.85	94.7	1.04	44.00
13C12-OCDD	2.62	67.0	0.91	50.16

Allied Iron Steel

WRI-7-A · Duplicate

TRIANGLE LABORATORIES, INC
2,3,7,8-TCDD/TCDF ANALYSIS

ANALYST	MDC	FILE #	M870972
DATE	12/5/88	CONCAL #	M870965
SAMPLE WT	10.78	TLI #	1368
SAMPLE ID	WRI-7A CONFIRM		

NAME	AMT (ng)	DL	EMPC	RATIO	RT
2378-TCDF*	ND		56.82	0.930	19.31
2378-TCDD	11.95			0.792	16.40

SURROGATE RESULTS SUMMARY

NAME	AMT (ng)	% RECOVERY	RATIO	RT
13C12-TCDF	1.51	81.19	0.810	19.35
37Cl-TCDD	2.05	110.48		16.40

INTERNAL STANDARDS RECOVERY RESULTS

NAME	AMT (ng)	% RECOVERY	RATIO	RT
2378-13C12-TCDD	1.86	100.18	0.818	16.39

* SIGNAL SATURATED; CONCENTRATION IS A MINIMUM ESTIMATE (RATIO IS OUT DUE TO SATURATION)

Allied Iron + Steel

TRIANGLE LABORATORIES, INC.
PCDD/PCDF ANALYSIS

ANALYST	MDC	FILE #	M871729
DATE	7-10-87	CONCAL #	M871727
SAMPLE WEIGHT	1.49	TLI #	8701425
SAMPLE ID	WRI-7-B-ASH		

NAME	AMT (ng/g)	NUMBER	DL	EMPC	RATIO	RT
2378-TCDD	ND		0.061		1.00	
TOTAL TCDD	7.88	4			0.76	
12378-PCDD	ND		0.089		1.00	
TOTAL PCDD	48.02	9			0.60	
123478-HxCDD	ND		0.073		1.00	
123678-HxCDD	9.95				1.28	36.54
123789-HxCDD	14.02				1.36	37.20
TOTAL HxCDD	125.51	5			1.28	
1234678-HpCDD	86.92				1.04	42.40
TOTAL HpCDD	184.73	2			1.04	
OCDD	146.78				0.89	47.25
2378-TCDF	66.90				0.78	24.40
TOTAL TCDF	268.91	12			0.75	
12378-PCDF	8.93				0.58	28.52
23478-PCDF	25.11				0.65	29.45
TOTAL PCDF	204.11	10			0.71	
123478-HxCDF	66.94				1.21	35.40
123678-HxCDF	19.96				1.11	35.51
234678-HxCDF	43.82				1.24	36.35
123789-HxCDF	5.90				1.25	37.49
TOTAL HxCDF	244.00	8			1.21	
1234678-HpCDF	165.61				0.97	41.12
1234789-HpCDF	16.56				1.00	43.16
TOTAL HpCDF	236.21	4			0.97	
OCDF	92.29				0.78	47.38

SURROGATE RESULTS SUMMARY

NAME	AMT (ng/g)	% RECOVERY	RATIO	RT
13C12-TCDF	14.20	105.8	0.79	24.38
37Cl-TCDD	14.91	111.1		25.19
13C12-HxCDF	13.80	102.8	1.18	35.40

INTERNAL STANDARDS RECOVERY RESULTS

NAME	AMT (ng/g)	% RECOVERY	RATIO	RT
2378-13C12-TCDD	13.01	96.9	0.74	25.19
13C12-PCDD	13.05	97.2	0.68	30.11
13C12-HxCDD	13.97	104.1	1.37	36.54
13C12-HpCDD	13.17	98.1	1.06	42.39
13C12-OCDD	23.30	86.8	0.90	47.24

Allied Iron + Steel

TRIANGLE LABORATORIES, INC
2,3,7,8-TCDD/TCDF ANALYSIS

ANALYST	mdc	FILE #	M871777
DATE	7-13-87	CONCAL #	M871763
SAMPLE WEIGHT	1.49	TLI #	8701425
SAMPLE ID	WRI-7-B-ASH		

NAME	CONC (ng/g)	DL	EMPC	RATIO	RT
2378-TCDF	10.48			0.773	15.14
2378-TCDD	0.45 *			0.740	13.09

SURROGATE RESULTS SUMMARY

NAME	CONC (ng/g)	% RECOVERY	RATIO	RT
13C12-TCDF	13.08	97.43	0.790	15.14
37Cl-TCDD	13.33	99.34		13.09

INTERNAL STANDARDS RECOVERY RESULTS

NAME	CONC (ng/g)	% RECOVERY	RATIO	RT
2378-13C12-TCDD	13.71	102.15	0.779	13.08

* No M-COC

TRIANGLE LABORATORIES, INC.

Allied Iron + Steel PCDD/PCDF ANALYSIS

ANALYST	MDC	FILE #	M871731
DATE	7-13-87	CONCAL #	M871727
SAMPLE WEIGHT	5.06	TLI #	8701425
SAMPLE ID	WRI-7-D-SOIL		

NAME	AMT (ng/g)	NUMBER	DL	EMPC	RATIO	RT
2378-TCDD	ND			0.17	1.45	25.22
TOTAL TCDD	2.38	9			0.74	
12378-PCDD	ND		1.060		0.57	30.13
TOTAL PCDD	8.05	11			0.61	
123478-HxCDD	ND		1.627		1.44	36.50
123678-HxCDD	1.81				1.34	36.57
123789-HxCDD	2.64				1.28	37.23
TOTAL HxCDD	20.89	7			1.27	
1234678-HpCDD	17.75				1.03	42.41
TOTAL HpCDD	34.12	2			1.03	
OCDD	40.83				0.88	47.29
2378-TCDF	8.13				0.75	24.40
TOTAL TCDF	29.11	11			0.76	
12378-PCDF	2.16				0.64	28.54
23478-PCDF	4.70				0.63	29.46
TOTAL PCDF	34.97	11			0.65	
123478-HxCDF	16.89				1.21	35.41
123678-HxCDF	5.37				1.27	35.52
234678-HxCDF	8.77				1.19	36.38
123789-HxCDF	ND		0.007		1.00	
TOTAL HxCDF	55.59	10			1.22	
1234678-HpCDF	49.13				0.98	41.13
1234789-HpCDF	6.20				0.99	43.17
TOTAL HpCDF	73.03	4			0.98	
OCDF	53.10				0.82	47.40

SURROGATE RESULTS SUMMARY

NAME	AMT (ng/g)	% RECOVERY	RATIO	RT
13C12-TCDF	3.61	91.4	0.80	24.38
37Cl-TCDD	4.02	101.6		25.21
13C12-HxCDF	3.76	95.0	1.24	35.43

INTERNAL STANDARDS RECOVERY RESULTS

NAME	AMT (ng/g)	% RECOVERY	RATIO	RT
2378-13C12-TCDD	3.78	95.7	0.78	25.20
13C12-PCDD	3.80	96.2	0.57	30.12
13C12-HxCDD	3.60	91.1	1.25	36.56
13C12-HpCDD	3.28	83.1	1.08	42.41
13C12-OCDD	5.18	65.6	0.89	47.27

Allied Iron + Steel

TRIANGLE LABORATORIES, INC
2,3,7,8-TCDD/TCDF ANALYSIS

ANALYST	mdc	FILE #	M871778
DATE	7-13-87	CONCAL #	M871763
SAMPLE WEIGHT	5.06	TLI #	8701425
SAMPLE ID	WRI-7-D-SOIL		

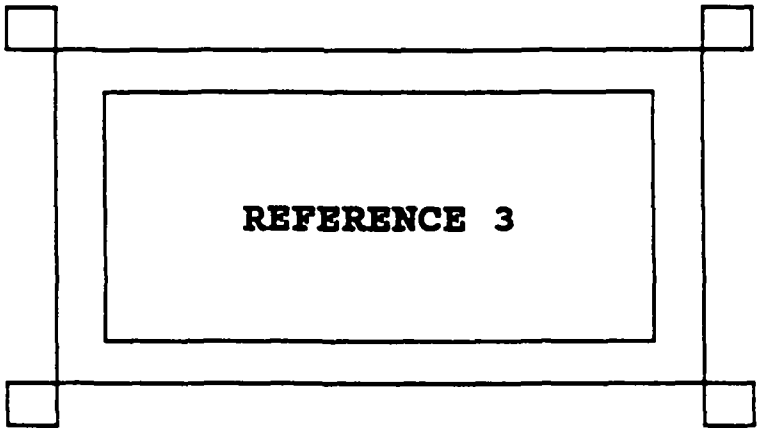
NAME	CONC (ng/g)	DL	EMPC	RATIO	RT
2378-TCDF	2.33			0.796	15.12
2378-TCDD	0.12			0.886	13.07

SURROGATE RESULTS SUMMARY

NAME	CONC (ng/g)	% RECOVERY	RATIO	RT
13C12-TCDF	3.75	94.92	0.753	15.11
37Cl-TCDD	3.73	94.43		13.07

INTERNAL STANDARDS RECOVERY RESULTS

NAME	CONC (ng/g)	% RECOVERY	RATIO	RT
2378-13C12-TCDD	3.93	99.37	0.839	13.07


REFERENCE 3

City Peoria County Peoria

Section 19 Twp. No. 8N Range 8E

Location [redacted]

Owner [redacted]

Contractor W. S. Hofstetter Address

Date drilled 1941 Elev. above sea level top of well

Depth 131'

Log over

Were drill cuttings saved Where filed

Size hole 4" If reduced, where and how much

Casing record

Distance to water when not pumping 61' 11" Distance to water is drawdown 10"

feet after pumping at 12 G. P. M. for hours.

Reference point for above measurements

Type of pump Distance to cylinder

Length of cylinder Length of suction pipe below cylinder

Length stroke Speed

Hours used per day Type of power

Rating of motor Rating of pump in G. P. M.

Can following be measured: (1) Static water level

(2) Pumping level (3) Discharge

(4) Influence on other wells

Temperature of water Was water sample collected

Date Effect of water on meters, hot water

coils, etc.

Date of Analysis Analysis No.

Recorder

Date

2807-22617 12

From driller's log

Cinders	0-5
Sand & yellow clay	5-20
Gravel	20-30
Sand, dry	30-90
Sand, Little water	90-100
Sand, Little coarser	100-105
Sand, Finer	105-110
Sand, coarser	110-130
Coarse Sand	130-131
Shale at 131	

LOG OF WATER WELL

NF

Property owner [redacted] Well No. 4791

Drilled by E.T. HAMPTON Year 9-68

Formations passed through	Thickness	Depth of Bottom
Yellow Clay	1'	17'
Water bearing gravel	17'	19'
Yellow Clay	19'	30'

[Continue on back if necessary]

Finished in Bored Well at ______ to 30 ft.

Cased with 24 inch Concrete Casing from 0 to 30 ft.

and ______ inch ______ from ______ to ______ ft.

Size hole below casing ______ inch. Static level from surf ______ ft.

Tested capacity ______ gal. per min. Temperature ______ °F.

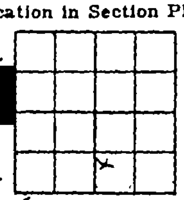
Water lowered to ______ ft. ______ in. in ______ hrs. ______ min.

Length of test ______ hrs. ______ min. Screen ______

Slot ______ Diam. ______ Length ______ Bottom set at ______ ft.

[Show location in Section Plat]

Township name Peoria Co. Elev. ______



Sec. [redacted]

Description of location [redacted]

[illegible] described section

Twp.

Rge.

Signed E.T. Hampton County ~~Tazewell~~ Peoria

Copy for Illinois State Geological Survey

Index:

White Copy –
Ill. Dept. of Pub ealth
Yellow Copy – Wel ontractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTE ND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored ✓. Hole Diam. 32 in. Depth 34 ft.
   Curb material Concrete Buried Slab: Yes ✓ No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled____. Finished in Drift____. In Rock____.
   Tubular____. Gravel Packed yes.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest: New Construction
   Building____Ft. Seepage Tile Field____
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank____ Barnyard____
   Leaching Pit____ Manure Pile____
3. Is water from this well to be used for human consumption?
   Yes ✓ No____
4. Date well completed 8-4-69
5. Permanent Pump Installed? Yes____ No____
   Manufacturer____ Type____
   Capacity____gpm. Depth of setting____ft.
6. Well Top Sealed? Yes yes No____
7. Pitless Adaptor Installed? Yes____ No____
8. Well Disinfected? Yes____ No____
9. Water Sample Submitted? Yes____ No____

REMARKS: I do not install the Pump. Other questions ask I don't know about. The Pump man installs & finishes up the well.

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner [redacted] Well No.____
    Address [redacted]
    Driller E.T. HAMPTON License No. 92-185
11. Permit No. NF6049 Date 4-30-69
12. Water from 18 to 20 Formation
    at depth____ to____ft.
13. County Peoria
    Sec. [redacted]
    Twp
    Rge.
    Elev.____

SHOW LOCATION IN [redacted]

14. Screen: Diam.____in.
    Length:____ft. Slot____

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
24"	Concrete Casing	1	34

16. Size Hole below casing:____in.
17. Static level____ft. below casing top which is____ft. above ground level. Pumping level____ft. when pumping at____gpm for____hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Yellow Clay	17'	18'
Water bearing Material	18'	20'
Yellow Clay	20'	34'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Edward T. Hampton DATE 8-9-69

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material _____. Buried Slab: Yes_____No_____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift X. In Rock____.
   Tubular X. Gravel Packed_____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

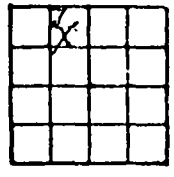
2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes____ No X
4. Date well completed July 25, 1981
5. Permanent Pump Installed? Yes X Date _____ No____
   Manufacturer Red Jacket Type Sub Location _____
   Capacity____gpm. Depth of Setting 95 Ft.
6. Well Top Sealed? Yes X No____Type _____
7. Pitless Adapter Installed? Yes____ No____
   Manufacturer _____ Model Number _____
   How attached to casing? _____
8. Well Disinfected? Yes X No _____
9. Pump and Equipment Disinfected? Yes X No _____
10. Pressure Tank Size X gal. Type _____
    Location _____
11. Water Sample Submitted? Yes_____ No_____

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner [redacted] No. _____
    Address [redacted]
    Driller Albert License No. 102-120
11. Permit No. 100485 Date 7-9-81
12. Water from gravel Formation 13. County Peoria
    at depth 102 to 112 ft.
14. Screen: Diam. 8 in.
    Length: 10 ft. Slot 60

[redacted]



SHOW LOCATION IN SECTION PLAT
550's 230'E nw/c
NE NW (irrig)

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
8	Steel	0	102

16. Size Hole below casing: _____ in.
17. Static level _____ ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at _____ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
topsoil & clay	15	15
yellow sand & some gravel	45	60
small gravel	10	70
gravel	42	112

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Bryan Zeigler DATE 12/81

IDPH 4.065
1/74 – KNB-1